DOCUMENT RESUME

ED 418 327 CE 076 300

AUTHOR	Buddin, Ike
TITLE	Surviving and Thriving in the IPSI Suite Environment. An Active Learning Guide for Educators and Trainers.
PUB DATE	1997-00-00
NOTE	121p.; IPSI Suite is a registered trademark.
AVAILABLE FROM	Ike Buddin, 2653 Windswept Lane, Mesquite, TX 75181-2655 ($36).
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Adult Education; *Computer Software; *Computer Uses in Education; Course Content; Curriculum Development; *Expert Systems; Inservice Teacher Education; Lesson Plans; *On the Job Training; Professional Development; *Student Evaluation; Test Construction
IDENTIFIERS	*IPSI Suite

ABSTRACT

This guide was developed to help users and trainers to use the expert system called IPSI Suite. The first section provides an introduction and overview to the IPSI Suite, an integrated software package that, at its basic level, facilitates the following processes: (1) course curriculum development, (2) lesson planning, and (3) student performance evaluation. Following the introduction, the guide contains 39 two-page modules organized in sections on these three topics. Each module shares a common format consisting of the following: a header identifying the software component, the module number and title, and the estimated time to complete it; a step-by-step guide through the module; illustrations; information and insights; actions to be taken before progressing to the next module; and further information. Ten appendixes provide modules on higher-level, more challenging uses of the software. (KC)

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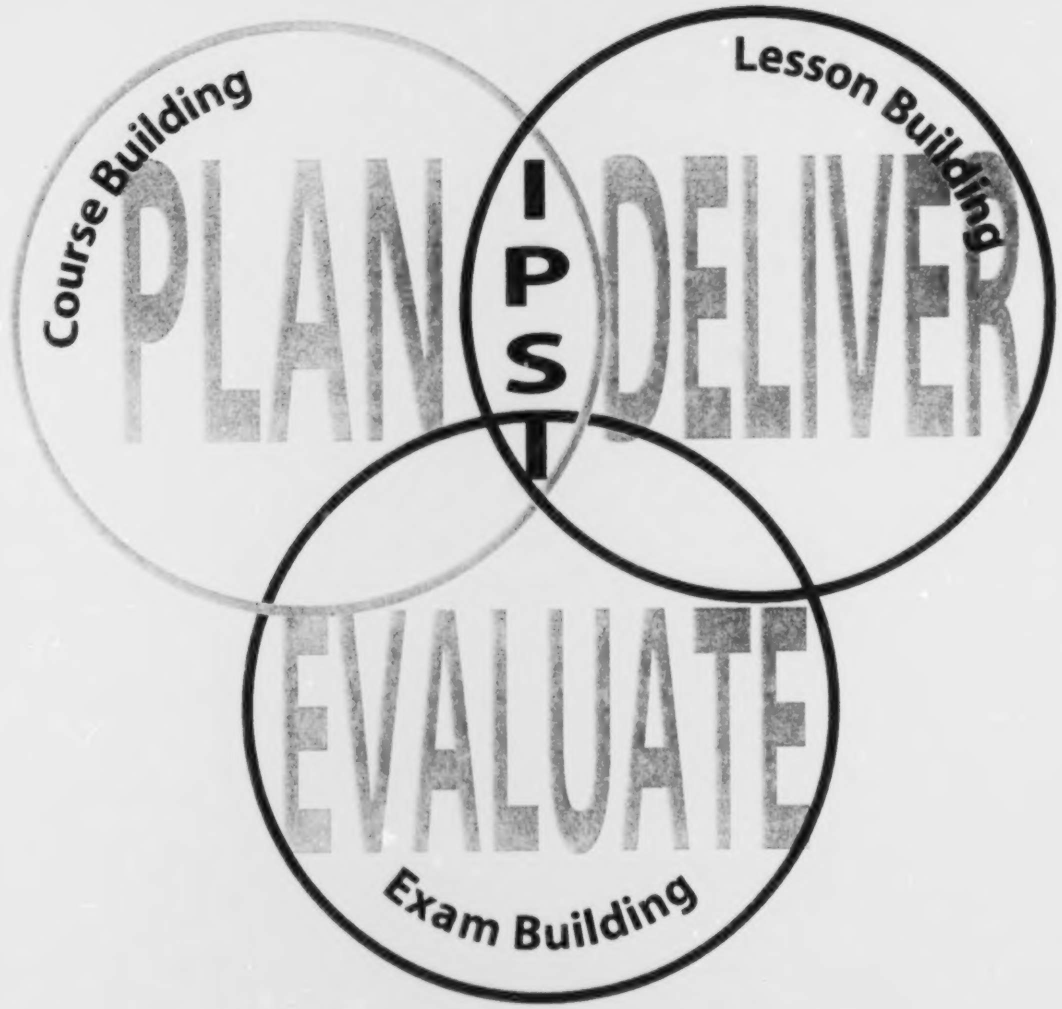

Surviving and Thriving in the IPSI Suite® Environment

an Active Learning Guide for Educators and Trainers

Ike Buddin

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Surviving and Thriving in the IPSI Suite Environment:
An Active Learning Guide for Educators and Trainers

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Surviving and Thriving in the IPSI Suite® Environment
An Active Learning Guide for Educators and Trainers

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PREFACE

The use and acceptance of the IPSI ensemble is an excellent measure of success. The investment of time, energy, and talent of a user to develop a publication on how to better survive and thrive in using the IPSI Suite is indeed a compliment. We are honored to accept the compliment and endorse the work!

IPSI was the first to market with an expert system, first to use a single expert, and continues to be one of the most, if not the most, widely used expert system in the public sector. With over a decade of experience, more than 180 institution licenses, more than 14,000 users, and working prototypes at all levels of education and industry training, we know the value of training. IPSI also recognizes the many and varied ways that faculty members and trainers have employed to become proficient users. IPSI provides a hard copy of the expert system and a documentation manual with the equivalent of about 500 pages of text. *Surviving and Thriving in the IPSI Suite Environment* is about one-fifth the number of pages. We laud the brevity and we trust that many beginning and experienced users will find it to be a useful replacement or a supplement to the existing materials.

The challenges facing education, particularly workforce development, during the coming decade are awesome. Workers have more to forget, learn, and apply than ever before. Documentation and analysis of instructional programs is vital to help meet these challenges. This book will quick-start and support the IPSI user and thereby unleash the power of the electronic expert system to create and refine performance-based education.

Users will find this work empowering. The book's organization is logical and sequential. The table of contents promises a lot. The flow charts, info & insights, actual dump screen examples, and detailed appendices deliver on the promise. IPSI trainers will surely want to keep this work handy as a desk reference and users will want to keep it within reach of the keyboard and mouse to use as a blueprint for action.

As with IPSI software, the proof is in the use. Try this one and get the proof.

Daniel E. Vogler, Ed.D.
Chief Executive Officer
Instructional Performance Systems, Inc.

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Introduction and Overview

> Only through curiosity can we find opportunities.
> Only by gambling can we take advantage of them.
> Unknown

Curiosity. It may be one of the most compelling reasons people become educators, whether that curiosity applies to people or professions or principles. But gambling? Most people don't like to take chances, especially unnecessary ones. But the words are undoubtedly related, each occurring in so many different dimensions. And no matter how an educator classifies the concept of gambling, one thing is sure: there's a certain emotional gamble with each new semester; with each new class; with each new learner encountered.

That's just one dimension to the chances we necessarily take in this profession. There are many others, such as the high-technology gamble. We see personal computers becoming as common as radios, and as software programs become increasingly powerful, curiosity is easily tempered by the gamble of using unfamiliar new methodologies, in spite of the opportunities they present.

That is why this book was written -- to enhance your curiosity about, and minimize the gamble associated with learning and using the IPSI Suite®

What exactly is the IPSI Suite and why *should* you be curious? At the most basic level, it's an integrated software package that substantially facilitates the processes of course curriculum development, lesson planning, and student performance evaluation. Appropriately, it is divided into three different components:

CourseBuilding	The course *planning* component. The final product created with CourseBuilding is a syllabus that addresses all of the most essential elements of student performance in a course of instruction.
LessonBuilding	This instructional *delivery* component is used to create three different products: lesson plans to develop instruction for group delivery, modules to design individualized instructional strategies, and projects to create special activities such as comprehensive reports, capstone experiences and cooperative learning experiences.
ExamBuilding	This final *evaluation* component helps you create individual test items and package them into examinations, quizzes, etc. ExamBuilding includes a full range of objective and subjective testing options, including performance and affective checklists.

The curriculum development and pedagogical principles designed into these components are comprehensive and methodical, whether you approach them as an instructional planner, learning facilitator, or performance evaluator. It is largely because of such strengths that new users often need assistance in applying many of the principles included.

That's where this book will help. As a resource to help you first *survive*, then *thrive* in the CourseBuilding environment, it has a unique structure. Its 39 two-page modules will provide the information you need to use the program at the most basic level, both pedagogically and in using the software. Then, when you want or need to learn more, there are 10 appendices which go beyond the basics so that you may soon *thrive* in using the software to its maximum potential. Except for some introductory or informational material, there is a common format to each module:

✓ **Header**	The gray bar across the top of each module will identify the software component, the module number and title, and the estimated amount of time you should expect to spend doing the work called for within the module.
✓ **Step-by-Step**	This is the starting point for all the work you'll do in each module (except introductory or informational ones). It will guide you through each step to take in manipulating the software for the task at hand. It will also identify when to read or review other parts of the module.

✓ **Illustrations**	A variety of figures, tables, and screen images will help you quickly relate to the work called for in the module.
✓ **Info & Insights**	This will give you timely information and advice designed to answer basic questions you may have as you progress.
✓ **Before You Progress. . .**	This section includes any remaining actions you should take before you proceed to the next module.
✓ **For More Information. . .**	This block is the primary link between the *surviving* and the *thriving* modes in the book. You should read through this block to determine your personal need or interest in the materials cited there.

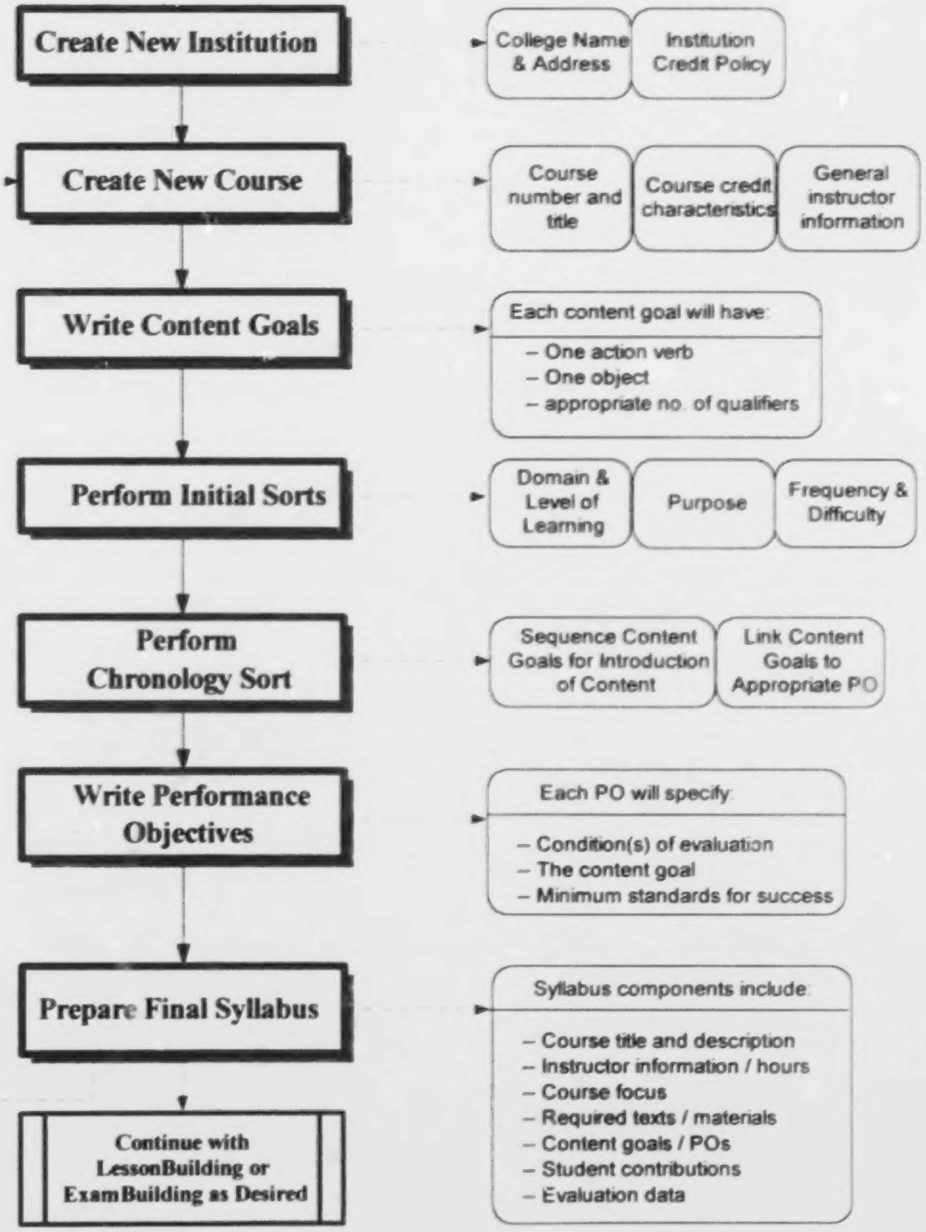
As you begin this experience, you should complete the CourseBuilding modules (1-16) in order. Then you may opt to learn either LessonBuilding (17 - 26) or ExamBuilding (27 - 40), depending on your personal needs.

Well, that's how the book is organized. But what about your readiness to use it and the IPSI software? Most fundamentally, you should be an educator with a subject to teach. You absolutely must be proficient in using Microsoft Windows® (version 3.1 or later). Ideally, you should be acquainted with a word processing program such as Microsoft Word® or WordPerfect®.

Finally, it is important to realize that there are many ways to approach curriculum and instructional development. Some efforts are based on the subject matter to be taught as determined by the people involved in the curriculum design process. Others initiatives may be driven by the amount of time available to get the job done. In the IPSI Suite, both of these issues are considered as you progress, but the overriding emphasis is on *student performance*: what that performance should be, how to verify the students' ability to do it, and your educational role in developing specific student knowledge and skills. For educators involved in the "paradigm shift" from lecturing to facilitating, the IPSI Suite will prove to be a major boost in this new direction.

Is the curiosity still there? Good. Now roll the dice.

Table 1. The CourseBuilding Syllabus Development Process


Create New Institution
College Name & Address
Institution Credit Policy
Create New Course
Course number and title
Course credit characteristics
General instructor information
Write Content Goals
Each content goal will have:
– One action verb
– One object
– appropriate no. of qualifiers
Perform Initial Sorts
Domain & Level of Learning
Purpose
Frequency & Difficulty
Perform Chronology Sort
Sequence Content Goals for Introduction of Content
Link Content Goals to Appropriate PO
Write Performance Objectives
Each PO will specify:
– Condition(s) of evaluation
– The content goal
– Minimum standards for success
Prepare Final Syllabus
Syllabus components include:
– Course title and description
– Instructor information / hours
– Course focus
– Required texts / materials
– Content goals / POs
– Student contributions
– Evaluation data
Continue with LessonBuilding or ExamBuilding as Desired

Info & Insights . . .

The best preparation for tomorrow is to do today's work superbly well.
Sir William Osler, Canadian physicist

CourseBuilding is all about planning a course of instruction. Planning helps assure good results. Superior planning helps achieve superior results.

CourseBuilding is a superb instrument for helping you plan student learning. For managing time. For determining how much content a course should contain. For deciding what should - and should not - be included in a course of instruction.

If a syllabus constituted a legal contract for what a student would gain in a course, then the syllabus created using CourseBuilding would accommodate the most persnickety lawyer. But legalities aren't the issue here; student learning is. Learning content designed with CourseBuilding helps assure that students fully understand what results to expect if they successfully complete your course.

So planning is about preparing for results. It is also about maintaining flexibility. As an educator, you already superbly understand this need. You also understand that sometimes, to promote flexibility, planning must be highly detailed.

So it is with CourseBuilding. Refer now to **Table 1**. Some terms will be unfamiliar to you; that's OK. Focus on the flow and overall content of the diagram. The beauty in this meticulous program is that it will help add new variety and flexibility in your teaching styles. And it will help maximize the learning and skills your students gain as a result of *superior planning*.

Before You Progress . . .

. . . Make sure the IPSI Suite (version 4.0 or higher) is installed on your computer at your earliest convenience.

For More Information . . .

. . . Continue with Module 2.

Table 2. Examples of Content Goal Statements

Cognitive Content Goals: *The student will . . .*
- identify opportunity cost principles.
- design small business file plans.
- analyze Nazi party development factors.
- differentiate primary and secondary paragraph statements.
- label cell components.
- specify ethical job interview practices.
- interpret electrical schematics.
- diagram sentences.
- determine cloud formation types.
- outline estate planning fundamentals.

Cognitive content goals are knowledge-based statements of student performance. No special tools or equipment items are required for cognitive performance.

Psychomotor Content Goals: *The student will . . .*
- debug software programs.
- take patient vital signs.
- troubleshoot avionics systems.
- weld aluminum panels.
- design multi-family housing circuitry layouts.
- winterize small powered equipment components.
- calculate pesticidal concentrate requirements.
- use Internet search engines.

Psychomotor content goals are skill-based. Performance typically requires special tools or equipment components.

Affective Content Goals: *The student will . . .*
- demonstrate safe working habits.
- demonstrate self-management characteristics.
- exhibit multicultural interpersonal skills.
- exhibit patient confidentiality respect.
- display effective listening skills.
- exercise work site leadership.

Affective content goals are based on overt student behaviors appropriate to classroom and/or job performance.

Time Required: 10 -15 minutes

Module 2

Info & Insights . . .

> ***If you ever think you're too small to be effective, you've never been in bed with a mosquito.***
>
> *Anita Roddick, Founder,*
> *The Body Shop retail chain*

In almost any new learning environment, there are some new terms. In CourseBuilding, two terms are fundamental.

The first term is *content goal*. A content goal is *a brief statement of what cognitive, psychomotor, or affective action the student will perform*. Notice the word *what*. To maximize simplicity, content goals disregard other interrogatives such as *when, how*, etc. An important principle of each content goal is to get to the root of student performance and disregard peripheral issues until later.

To further increase simplicity, content goals have a very rigid grammatical structure:

"The student will *verb -- adjective(s) -- object*"

Read the examples in **Table 2**. Notice that each content goal is both student- and product-oriented, not process- or instructor-oriented. Content goals maximize these characteristics because each statement begins with *The student will* and is immediately followed by an action verb. Because of action verbs, you are able to objectively *observe* and *measure* student performance of each content goal.

From the instructional design perspective, you can think of content goals as the building blocks for all future materials you produce in the IPSI Suite. They provide the basis for lesson plans and modules developed with LessonBuilding, and they serve as anchors for writing test items with ExamBuilding.

Some instructors think that content goals are too small or simplistic to accommodate their particular subject matter. If you should feel this way, hold on to your skepticism. Take a moment to acknowledge and specify your reasons for having it. Then, as you continue through this program, also acknowledge the principles and techniques that help mitigate your concerns.

Before You Progress . . .

...Read Appendix A: Outcomes, Objectives, and Goals -- Whatever!

Time needed: 3-5 minutes

For More Information . . .

... **about content goals:**

- ☐ Start the IPSI Suite program.
- ☐ Press **F2** to access the book, *Performance Instruction: Planning, Delivering, Evaluation*
- ☐ Progress through the menus as follows:
  - ☐ Part I: Planning
  - ☐ Chapter 1: Specifying Instructional Content
  - ☐ Writing Content Goal Statements
- ☐ Use the ≥> button to progress through the information.
- ☐ Read through Guideline 2 for writing content goals.

Time needed: 5-10 minutes

Table 3. Performance Objectives

One content goal as the basis for . . .
Performance

The student will use standard proofreading markup symbols.

. . . One performance objective
Condition(s) - Performance - Standard(s)

The student may not use references. The student will use standard proofreading markup symbols. Performance will be satisfactory if symbols are used and the use receives a rating of at least 15 out of 20 points.

Multiple content goals as the basis for . . .
Three to five content goals

The student will . . .

21. cite social order developmental concepts
22. describe basic culture elements
23. examine cultural diversity factors
24. analyze cultural change dynamics

. . . One performance objective
Condition(s) - Performance - Standard(s)

This objective applies to course goals 21-24. The student willl not be allowed references. The student will analyze cultural change dynamics. Performance will be satisfactory if dynamics in 3 out of 5 available scenarios are analyzed and the analyses are based on principles outlined in the text.

Affective PO

The student will be a member of GEO1321. The student will demonstrate multicultural interpersonal skills. Performance will be satisfactory if all items on the DO / DON'T list developed in class are met.

Psychomotor PO

The student may use references and computer resources. The student will create small business accounting system. Performance will be satisfactory if a fully functional system is created, the creation meets all business needs, and the system is completed by the due date.

Cognitive PO

The student may not use references. You will report to the testing center as directed. You will complete course midterm exam. Performance will be satisfactory if the exam is completed by the date given and earns at least 120 out of 160 possible points.

Time Required: 5 - 10 minutes

Module 3

Info & Insights . . .

The second fundamental term in the IPSI Suite is the *performance objective.*

As you read the examples in **Table 3**, they may remind you of similar statements called *behavioral* or *criterion objectives.* Performance objectives (POs) are closely related; all of these statements have three standard components:

- **Condition(s)** which specify the environment in which students will be evaluated.
- The **content goal** or action the student will perform (a.k.a., the *performance, behavior* or *outcome*).
- The **standard(s)** students must meet to be successful.

Behavioral and criterion objectives can be very arduous and time-consuming to write. This is where performance objectives are a league apart. In the CourseBuilding environment, you will produce each performance objective you need in just a few minutes.

But do you really *need* POs? Yes, and your students need them too. At the most practical level, POs save you the trouble of answering questions such as:

- Is this an open-book test?
- What's a passing grade for this test?
- Can we use calculators?
- Will we be evaluated with a test or in the lab?

Refer back to Table 1 in Module 1. Notice that several actions occur between the times when you write content goals and POs. Each of these actions will help you determine where to create a PO.

And now, let's get with The Program . . .

Before You Progress . . .

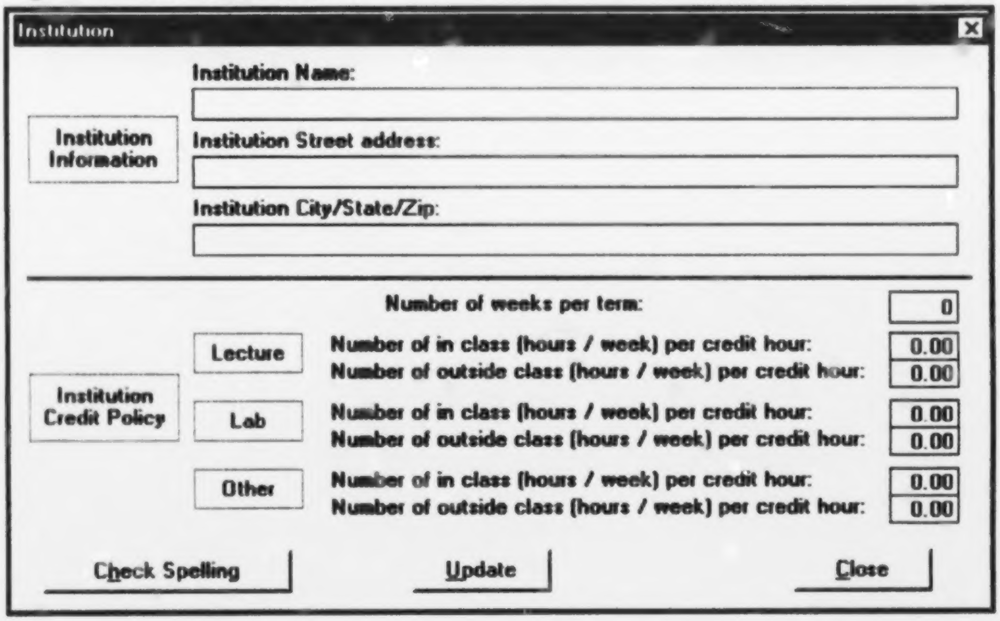
. . . if you haven't already done so, make sure that the IPSI Suite is fully installed on your computer.

For More Information . . .

✍ Step by Step . . . ☆ Start Here ☆

- ❒ 1. Start the IPSI Suite program.
- ❒ 2. Select **File | New Institution**
- ❒ 3. In the *Create Institution* window:
  - ☐ Enter an abbreviated name for your institution. Use no more than 8 characters.
  - ☐ Select the drive and directory where your new installation will be located.
  - ☐ Select **OK**. The *institution* icon will appear on the menu bar.
- ❒ 4. Read Info and Insights.
- ❒ 5. Select the *institution* icon to enter data about the institution, as shown in **Figure 1**.
  Note 1: In this module, you will only be entering information in the top half of this screen.
- ❒ 6. After entering all institution information, select **Update** to save the information.
  Note 2: If you have to go back and make revisions, notice that the **Update** button changes to **Modify**.

Figure 1. Institution Data



Institution Name:
Institution Street address:
Institution City/State/Zip:

Number of weeks per term: 0

Lecture
Number of in class (hours / week) per credit hour: 0.00
Number of outside class (hours / week) per credit hour: 0.00

Lab
Number of in class (hours / week) per credit hour: 0.00
Number of outside class (hours / week) per credit hour: 0.00

Other
Number of in class (hours / week) per credit hour: 0.00
Number of outside class (hours / week) per credit hour: 0.00

Time Required: 10 - 15 minutes Module 4

Info & Insights . . .

To be sure, what you just did represents a modest beginning. Still, from the moment that you gave your institution a name, you created a database (*.mdb) file that will be the location of all future course development work you do.

Also, having entered your school's name and address, you'll have that information included automatically (at your option) on every syllabus, lesson plan, module, project, examination, and answer sheet you choose to produce.

If you wish, you can just as easily create other institution files tailored to the needs of a given department or division. For example, Mountain Creek College may have academic, occupational, and continuing education divisions. In such situations, it may be practical to create separate files with names such as:

- ✓ mcc-acad.mdb
- ✓ mcc-occ.mdb
- ✓ mcc-ce.mdb

With this approach, it's easier to design a database that meets the unique characteristics of a division (or instructor), instead of an entire school (This will make more sense in the next module when you enter the institution's credit policy).

As you create your institution file, notice that you can place it on whatever drives your computer has, including the a: (diskette) drive. Let me *discourage* you from choosing this particular location; create it on a hard drive instead. Why? As you work, you will often use an **Update** button which will save the entire file. If your computer must constantly save to a diskette, it will slow down your progress and probably become a nuisance to you.

If you set up the file on a hard drive, but wish to use the a: drive for portability (and perhaps, security), do the following:

- *For Microsoft Windows™ 3.1 or 3.11:* Use the File Manager to copy your institution's *.ldb and *.mdb files to a diskette.

- *For Microsoft Windows 95™:* Use My Computer to copy your institution's *.ldb and *.mdb files to a diskette.

If security is important to you, remember to remove these files from the hard drive after they're saved to a diskette.

Before You Progress . . .

For More Information . . .

✍ Step by Step . . .

☐ 1. Read Info & Insights before you continue.

■ **For K-12 and Noncredit Institutions:**

The screen in Figure 2 is essentially irrelevant to your needs. Still, CourseBuilding will not let you advance before you make some minimal entries here. Enter the number of weeks per term in the first block. Then tab to the second block, enter 1, and select **Close**. *Skip Module 6a and continue instead with Module 6b.*

■ **For Credit Institutions:**

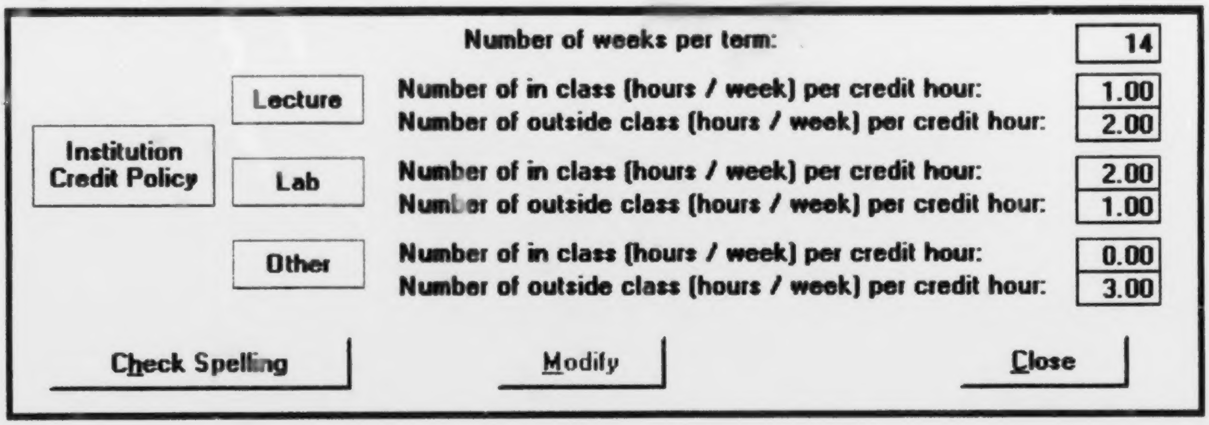
☐ 1. Click once in the appropriate text box to enter the number of weeks per term at your institution. **Note**: Make sure the numbers to be entered/edited are blue in color. If they are gray, first select the **Modify** button to enter the Institution Credit Policy.

☐ 2. Use the **Tab** key to continue through each remaining block. Enter the appropriate numbers as you go. **Note:** If you aren't sure what to enter in a block, use the settings shown in **Figure 2**.

☐ 3. Select **Update** and **Close** when finished.

☐ 4. Continue with Module 6a.

Figure 2. Institution Credit Policy



Number of weeks per term: 14

Lecture
Number of in class (hours / week) per credit hour: 1.00
Number of outside class (hours / week) per credit hour: 2.00

Lab
Number of in class (hours / week) per credit hour: 2.00
Number of outside class (hours / week) per credit hour: 1.00

Other
Number of in class (hours / week) per credit hour: 0.00
Number of outside class (hours / week) per credit hour: 3.00

Info & Insights . . .

To "kill time" is by definition to murder it.
Unknown

Some courses are extra difficult not so much because of the subject matter, but because the course is too overloaded for the time available (the opposite can also happen). Another cause for difficulty can occur because an instructor may expect students to spend more time on outside assignments than they can reasonably handle.

Wisely used, CourseBuilding helps you avoid such errors. It does so by collecting some objective information that lets it calculate how many content goals each course should have. The first data it collects relates to the Institution Credit Policy (ICP). The key components of this policy are shown in **Figure 2**.

Note: These components are based on typical college/ university credit courses. If you teach in grades K-12, a college continuing education department, or another non-credit-offering institution, CourseBuilding uses a slightly different way to estimate the number of content goals to write. For this reason, refer now to the appropriate instructions in Step-by-Step and continue as directed.

If you're in a credit-offering program, you should already have an ICP that's used to determine the number of contact hours necessary to equal a given number of semester or credit hours. Since the components of your ICP may be different from those used in CourseBuilding, *you* may need to determine the ICP for your "personal institution."

As you review Figure 2, you should have no trouble with the "in class" hours per week component in each group (*Lecture*, *Lab*, and *Other*). So the major question is: How much time per week do you expect your students to spend on out-of-class assignments and studies? A common rule of thumb is that students should spend twice as much time *outside* the classroom as they spend *inside* the classroom. If you expect students to abide by this rule, then your ICP may appear very much like the one shown. If you don't, then simply enter a number that is more appropriate for what you expect from your students. (CourseBuilding will automatically include this expectation in your final syllabus.)

You may return to the *Institution* screen and modify the ICP as needs change. This is useful if your institution has a variety of course scheduling options such as compressed semesters, open enrollment or other factors that affect course length. Note that each time you change the ICP, the number of content goals CourseBuilding recommends may change with it.

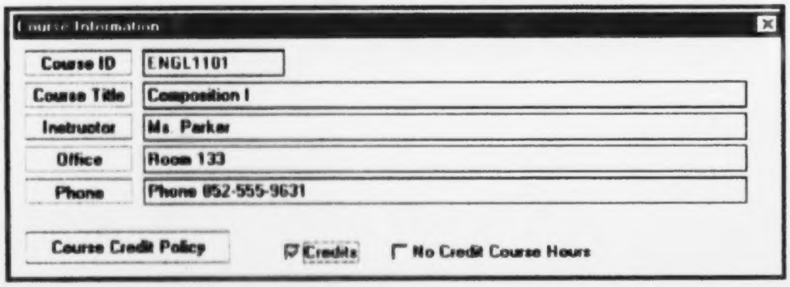
Before You Progress . . .

For More Information . . .

Step by Step . . .

- ☐ 1. Make sure that the course you are starting is a for-credit course. If you are creating a non-credit or K-12 course, go to Module 6b now.
- ☐ 2. Start the IPSI Suite and open your institution.
- ☐ 3. Open **CourseBuilding**. The *Select a course* window will appear.
- ☐ 4. Select the *New Course* button. You'll be prompted to *Enter a course ID*.
- ☐ 5. Using only letters and/or numbers, enter the Course Identification (i.e., ENG1301).
- ☐ 6. Select the *OK* button.
- ☐ 7. Select the *Course Info* button at the top of your screen. A screen which includes **Figure 3** will appear.
- ☐ 8. Read Info & Insights, items 1 and 2.
- ☐ 9. Indicate whether the course is or isn't for credit by selecting the appropriate box. A new section of information will appear.
  Note: these instructions assume you are developing a credit course.
- ☐ 10. Select the **Modify credits** button. The window shown in **Figure 4** will appear.
- ☐ 11. Enter the number of credit, lab, and other hours in their respective text boxes.
- ☐ 12. Read Info & Insights, item 3.
- ☐ 13. Select **Continue** to close the window.

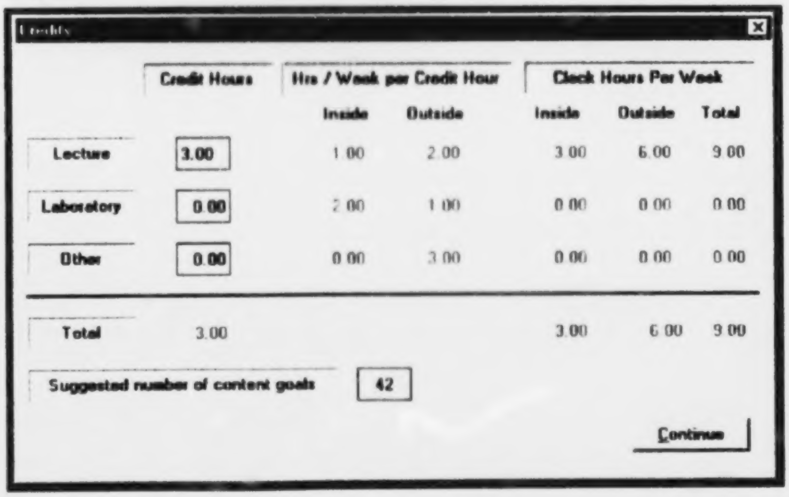
Figure 3. Course Information (For-credit Course)



Course Information

Course ID: ENGL1101
Course Title: Composition I
Instructor: Ms. Parker
Office: Room 133
Phone: Phone 852-555-9631

Figure 4. Content Goal Calculations for a Credit Course



Credits

	Credit Hours	Hrs / Week per Credit Hour		Clock Hours Per Week		
		Inside	Outside	Inside	Outside	Total
Lecture	3.00	1.00	2.00	3.00	6.00	9.00
Laboratory	0.00	2.00	1.00	0.00	0.00	0.00
Other	0.00	0.00	3.00	0.00	0.00	0.00
Total	3.00			3.00	6.00	9.00

Suggested number of content goals: 42

Info & Insights . . .

1. The labels for each line of text will not automatically appear in the final syllabus. If you want headings like "Room No." or "Phone" to appear, type them in as you progress.

2. You'll be limited to the number of lines shown in the window. If you need to fit in other information, either squeeze it in on an appropriate line or wait until it's time to print the syllabus.

3. Notice that as you enter the credit and other hours earned in the course, the recommended number of content goals changes. This number may be much higher than the number of competency (or similar) statements you typically include in a syllabus. If this is the case, do not be concerned; remember these things:

   a. The 3-hour-per-content-goal guideline (as described in Appendix A).

   b. The number recommended is just that -- a recommendation. The software doesn't absolutely hold you to the number given (although I strongly suggest that you do!).

   c. Later on, you'll have the opportunity to make some decisions about each content goal that will help determine what should be covered during class hours and what should *not*. In other words, CourseBuilding will help you manage your own time.

What If . . .

. . . You wish to shorten the target time for each content goal? Take the suggested number of content goals, multiply by 3, then divide by the new target. Enter your findings here:

Course:______________________ New target time: _______ hours

Revised suggested number of content goals: _______

Now turn briefly to Module 19 and record these entries in the space provided.

Before You Progress . . .

For More Information . . .

. . . About how the Institution Credit Policy affects the number of content goals recommended:

☐ Press the **F2** key to access the IPSI book
☐ Progress through the menus as follows:
  ☐ Part I: Planning
  ☐ Chapter 1: Determining Pool Size

Time needed: 5-10 minutes

❖ ❖ ❖

. . . Read Appendix B, *Content Goal Number Crunching*, to observe how various course characteristics affect the number of content goals recommended.

Time needed: 2-5 minutes

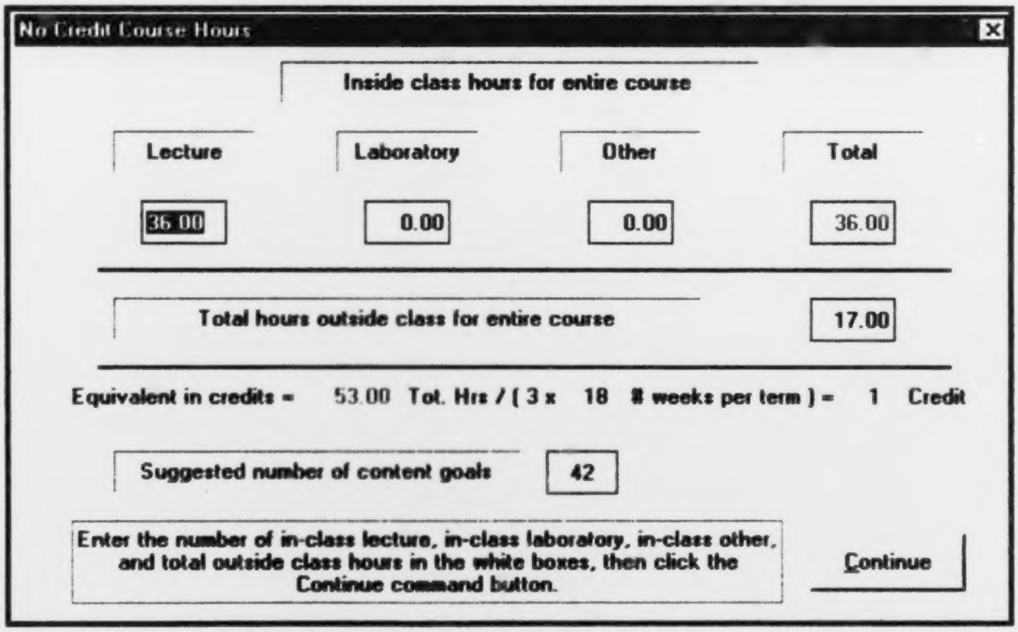
22

Starting a New Non-Credit Course

Step by Step . . .

☐ 1. Start the IPSI Suite and open your institution.
☐ 2. Open **CourseBuilding**. The *Select a course* window appears.
☐ 3. Select the *New Course* button. You'll be prompted to *Enter a course ID*.
☐ 4. Using only letters and/or numbers, enter the Course Identification (i.e., PHYS1301).
☐ 5. Select the *OK* button.
☐ 6. Select the *Course Info* button at the top of your screen. A screen which includes Figure 3 (Module 6a) will appear.
☐ 7. Read **Info & Insights**, items 1 and 2.
☐ 8. In the four white text boxes, enter the course title and other information exactly as you want them to appear on the syllabus.
☐ 9. After entering your course information, select the *No Credit Course Hours* box. Then select **Modify Hours**. The screen shown in **Figure 5** will appear.
☐ 10. Enter the number of in-class lecture, lab, and other hours in their respective text boxes.
☐ 11. Enter the total hours outside class for the entire course.
☐ 12. Read **Info & Insights**, item 3.
☐ 13. Select **Continue** button to close the window.

Figure 5. Content Goal Calculations for a Non-credit Course



No Credit Course Hours

Inside class hours for entire course

Lecture	Laboratory	Other	Total
36.00	0.00	0.00	36.00

Total hours outside class for entire course: 17.00

Equivalent in credits = 53.00 Tot. Hrs / (3 x 18 # weeks per term) = 1 Credit

Suggested number of content goals: 42

Enter the number of in-class lecture, in-class laboratory, in-class other, and total outside class hours in the white boxes, then click the Continue command button.

Info & Insights . . .

1. The labels for each line of text will not automatically appear in the final syllabus. If you want headings like "Room No." or "Phone" to appear, type them in as you progress.

2. You'll be limited to the number of lines shown in the window. If you need to fit in other information, either squeeze it in on an appropriate line or wait until it's time to print the syllabus.

3. Notice that as you enter the credit and other hours earned in the course, the recommended number of content goals changes. This number may seem high for the amount of time available. If this is the case, remember that this recommendation may be influenced by the amount of out-of-class time expected of students as outlined in the Institution Credit Policy. Also, the number recommended is just that -- a recommendation. The software doesn't absolutely hold you to the number given. Later on, you'll have the opportunity to make a series of decisions about each content goal that will help you determine what should be covered during class hours and what should *not*. In other words, CourseBuilding will help you manage your own time, as well as that of your students.

What If . . .

. . . You wish to shorten the target time for each content goal? Take the suggested number of content goals, multiply by 3, then divide by the new target. Enter your findings here:

Course:____________________ New target time: _______ hours

Revised suggested number of content goals: _______

Now turn briefly to Module 19 and record these entries in the space provided.

Before You Progress . . .

For More Information . . .

. . . About how the Institution Credit Policy affects the number of content goals recommended:

- ☐ Press the **F2** key to access the IPSI book
- ☐ Progress through the menus as follows:
  - ☐ Part I: Planning
  - ☐ Chapter 1: Determining Pool Size

Time needed: 5-10 minutes

❖ ❖ ❖

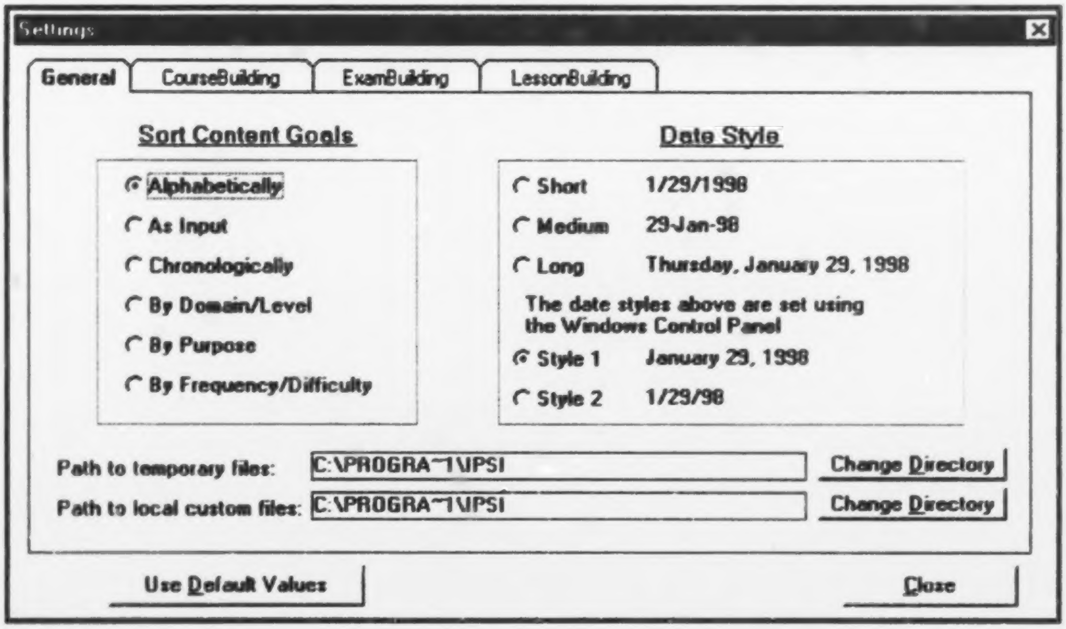
. . . Read Appendix B, *Content Goal Number Crunching*, to observe how various course characteristics affect the number of content goals recommended.

Time needed: 2-5 minutes

✍ Step by Step . . .

- ☐ 1. Start the IPSI Suite and open your institution.
- ☐ 2. Open **CourseBuilding**.
- ☐ 3. Read **Info & Insights**, item 1.
- ☐ 4. To make program settings:
  - ☐ Select **CourseBuilding** just below the IPSI title bar.
  - ☐ Select **Settings**. The window shown in **Figure 6** will appear.
- ☐ 5. Notice that the *Settings* window has four "tab cards," Stay in the one labeled **General**.
- ☐ 6. Read **Info & Insights**, item 2.
- ☐ 7. Make your choices and select **Close** when ready.

Figure 6. CourseBuilding Operational Settings



Settings

General | CourseBuilding | ExamBuilding | LessonBuilding

Sort Content Goals

● Alphabetically
○ As Input
○ Chronologically
○ By Domain/Level
○ By Purpose
○ By Frequency/Difficulty

Date Style

○ Short 1/29/1998
○ Medium 29-Jan-98
○ Long Thursday, January 29, 1998

The date styles above are set using the Windows Control Panel

● Style 1 January 29, 1998
○ Style 2 1/29/98

Path to temporary files: C:\PROGRA~1\IPSI

Path to local custom files: C:\PROGRA~1\IPSI

Info & Insights . . .

1. The purpose of this module is to help you make some basic settings that will allow CourseBuilding to accommodate your personal preferences. When you're done here, your content goal list will be arranged according to your preference for:

   a. An alphabetical listing.

   b. An "as input" listing (based on the order you write them in).

   c. A listing based on other content goal characteristics.

   Additionally, you'll select a calendar date format that meets your personal desires.

2. In the section labeled *Sort Content Goals*, there are some options that won't make sense yet; don't be concerned about that. You can return to this screen later and change these settings based on your particular needs for a certain type of report (we will revisit this screen later based on what those needs may be). Instead, focus on the first two options (*Alphabetically*, and *As input)*. I recommend that you use one of these two settings initially, based on the following "pro's and con's:"

   a. If you choose *alphabetically*, as you write content goals, they will be listed on the screen in that manner, based on the opening action verb. This can help you avoid overuse of a given verb. On the other hand, this option can make it harder to locate a content goal on a particular subject when you feel the need to go back to edit something.

   b. If you choose *As input*, content goals will be listed in the order you write them. If you need to edit a content goal you wrote a few minutes (or hours) ago, it may be easier to find when this option is selected. But keep in mind: you should avoid overusing a particular verb.

   Note: You can return to this screen and change these settings later, but *not while you're still writing or editing a course*. Before you can change these settings, you'll have to exit the course and then change the setting. It isn't hard, but it may be a nuisance if you're running the program on a relatively slow computer.

Before You Progress . . .

. . . Note how much time you now have available. In the next module, you'll get down to the business of writing content goals. Plan to spend at least an hour to cover the module and its related appendix.

For More Information . . .

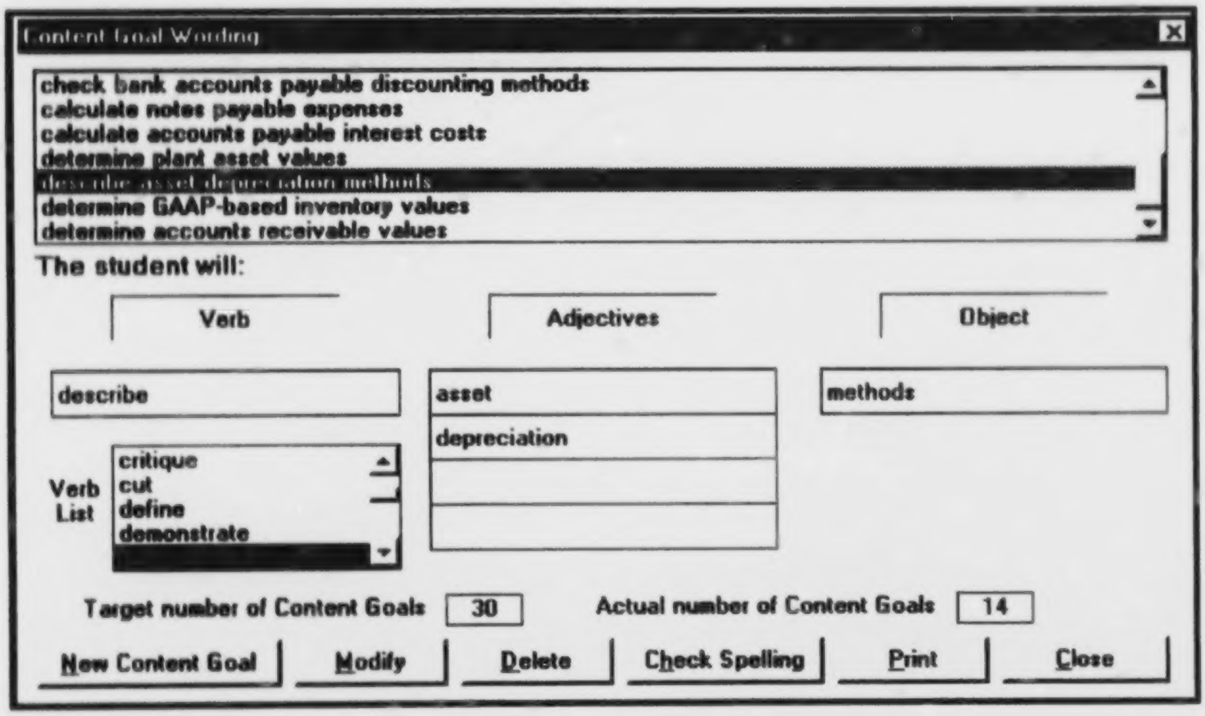
Step by Step . . .

☐ 1. Start the IPSI Suite and open your institution.
☐ 2. Open **CourseBuilding**.
☐ 3. Click on the yellow **CourseBuilding** button.
☐ 4. Select a course to write/edit. Select **OK**.
☐ 5. Select the **Goal** button.
☐ 6. In the bottom left corner, select the **Content goal** button. The screen in **Figure 7** will appear.
☐ 7. Read Info & Insights and Appendix C, *The Fine Art of Writing Content Goals*.
☐ 8. Repeat these steps as you write content goals:
  - ☐ Enter verb
  - ☐ Enter object
  - ☐ Enter adjective(s) as needed
  - ☐ Select **Save New Content Goal**
  - ☐ Select **New Content Goal**

Note: You can use the mouse, the **Tab** key or the **Enter** key to progress through these steps.

☐ 9. Select **Close** when finished.

Figure 7. Content Goal Writing and Editing



Content Goal Wording

check bank accounts payable discounting methods
calculate notes payable expenses
calculate accounts payable interest costs
determine plant asset values
describe asset depreciation methods
determine GAAP-based inventory values
determine accounts receivable values

The student will:

Verb: describe

Adjectives: asset
depreciation

Object: methods

Verb List:
critique
cut
define
demonstrate

Target number of Content Goals: 30

Actual number of Content Goals: 14

Info & Insights . . .

> ***If I had eight hours to chop down a tree, I'd spend six hours sharpening my axe.***
> *Abraham Lincoln*

This is one of the most important modules in this book. It is also the one where you will probably spend the greatest amount of time as you work in CourseBuilding.

Writing content goals is both a science and an art. It's a science because there is a specific methodology to follow. The first word determined is the action verb -- *what* the student will do. The next word specified is the object of that verb. Using this pattern will help you insure that there is a solid correlation between the verb and object. Last are the adjectives, or qualifiers -- the subject matter itself often provides this component.

Writing content goals is also an art in that it calls on your instructional creativity to find the best combination of words that accurately convey what the student will do. This can be a challenge; the English language provides seemingly endless options for stating even simple ideas. Consider how many different ways you may opt to say the say the same basic thing:

The Student Will:
- write research paper.
- create research report.
- produce research findings analysis.
- develop research-based findings.

To be sure, there are many ways to apply your creative energies, even when writing statements as straightforward as content goals. For this reason, take some well-spent time to review the various techniques described in **Appendix C**, *The Fine Art of Writing Content Goals*. It contains many useful tools and important insights as you prepare to spend the next few hours in this endeavor. It includes:

1. Making and Using Verb and Object Lists
2. Converting "Competencies" to Content Goals
3. Useful References in Writing Content Goals
4. Accommodating Your Educational Audience
5. Editing Content Goals for the 3-hour Time Factor

Before You Progress . . .

. . . Try to write at least 80% of the recommended number of content goals before you advance into the next module. Don't try to do this in one sitting. Limit yourself to two hours per work session to do the work needed.

If you are concerned about the quality of your content goals, be patient. The sorting decisions you make later will help you determine where improvements may be needed.

For More Information . . .

. . . Why does a content goal use so few parts of speech? Where did the 3-hour rule come from? Answers to questions such as these are in the **IPSI Book**. For the answers, press **F2** and follow these links:

- ☐ Part I: Planning
- ☐ Chapter 1: Specifying Instructional Content
- ☐ Writing Content Goal Statements.
- ☐ Read the seven guidelines given there.

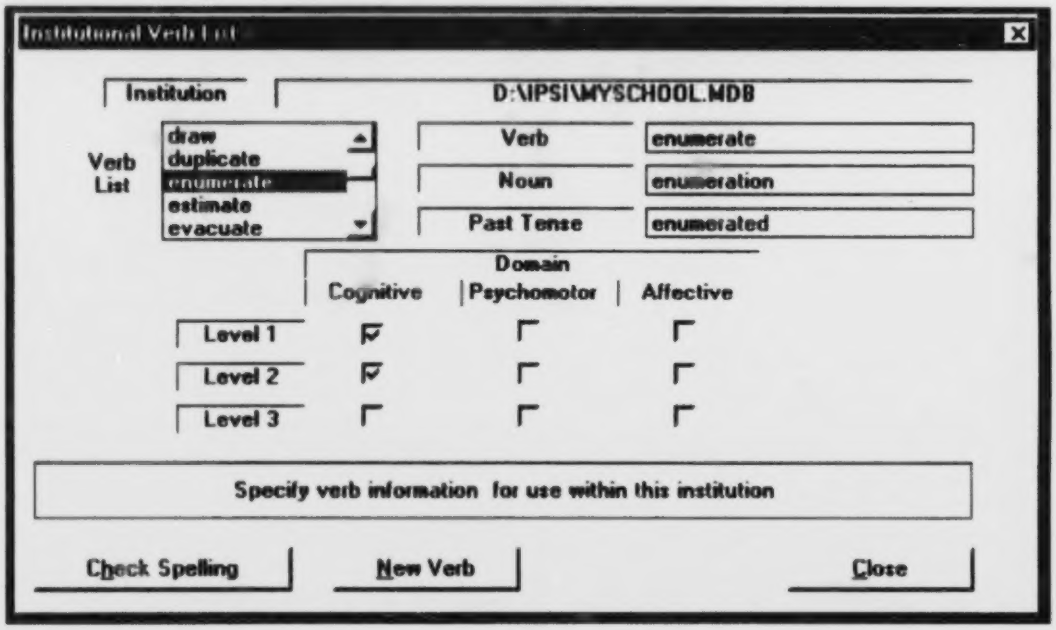
Time needed: 10-20 minutes

Adding New Action Verbs to the Institution Database

Step by Step . . .

- ☐ 1. Read the Introduction in **Info & Insights**.
- ☐ 2. Notice **Figure 8**. There are two ways you can access this window to add new verbs.
  - ☐ **Option 1:** After you open an institution, but before you open a course, click on the **Verb List** button.
  - ☐ **Option 2:** In the Content Goal Wording window (Module 8), write a content goal using the new verb. When you save the content goal, you'll be asked: *Do you want this verb added to the verb list?* Select **Yes.**
- ☐ 3. If you used Option 1 above, Select **New Verb**.
- ☐ 4. Enter the verb, its noun form, and its past tense form in the appropriate blocks.
- ☐ 5. Refer to the object list in Appendix C (Table C2)
  - ☐ Match the new verb with 3-5 different objects. **Note:** Write in new objects to the list as needed.
  - ☐ Read **Info & Insights**, item 1.
- ☐ 6. Use the **Check Spelling** button to verify proper spelling.
  Note: The CourseBuilding program will not validate correct word usage.
- ☐ 7. Select **Close** to exit.

Figure 8. Adding New Verbs



Institutional Verb List

Institution: D:\IPSI\MYSCHOOL.MDB

Verb List: draw, duplicate, enumerate, estimate, evacuate

Verb: enumerate

Noun: enumeration

Past Tense: enumerated

	Domain		
	Cognitive	Psychomotor	Affective
Level 1	☑	☐	☐
Level 2	☑	☐	☐
Level 3	☐	☐	☐

Specify verb information for use within this institution

Time Required: 5 - 10 minutes **Module 9**

Info & Insights . . .

Introduction. For many courses, particularly academic ones, the verb list built into the IPSI Suite is quite adequate. But in other courses, notably technical/occupational ones, there may be a need to add new action verbs to the IPSI database. This module will show you how. If you have no need at this time to add new verbs, go on to Module 10.

1. This is where you must enter certain *Domain* and *Level* information about your verb. The IPSI Suite uses a modified version of Bloom's Taxonomy in which there are three levels of learning for each domain. These are:

Domain	Level of Learning
Cognitive	C1 Knowledge
	C2 Understanding
	C3 Application
Psychomotor	P1 Imitation
	P2 Practice
	P3 Habit
Affective	A1 Awareness
	A2 Distinguish
	A3 Integrate

Analyze your verb in relationship to the objects you matched it with. Use this analysis to select the domain and level(s) of learning relevant to the new verb.

NOTE 1: A verb may be (but is not generally) included in more than one domain.

NOTE 2: Use these guidelines if you have trouble differentiating cognitive and psychomotor verbs. *A verb is psychomotor if:*

- The student must practice or repeat an action to become proficient.
- Special resources or a setting other than a traditional classroom (e.g. a computer or lab) is needed for the student to become proficient.
- A traditional paper-and-pencil test is not sufficient for evaluating student proficiency.

NOTE 3: In determining the level(s) of learning, select the highest level first. Then include any lower levels. Why? In evaluating student performance, it is appropriate to use a high-level verb, (such as *assess*) at a lower level, but you should not use a low-level verb, such as *list*, at a higher level.

Before You Progress . . .

For More Information . . .

. . . About the domains and levels of learning, turn to Appendix D and refer to the information *Domain and Level Sorts*.

Step by Step . . .

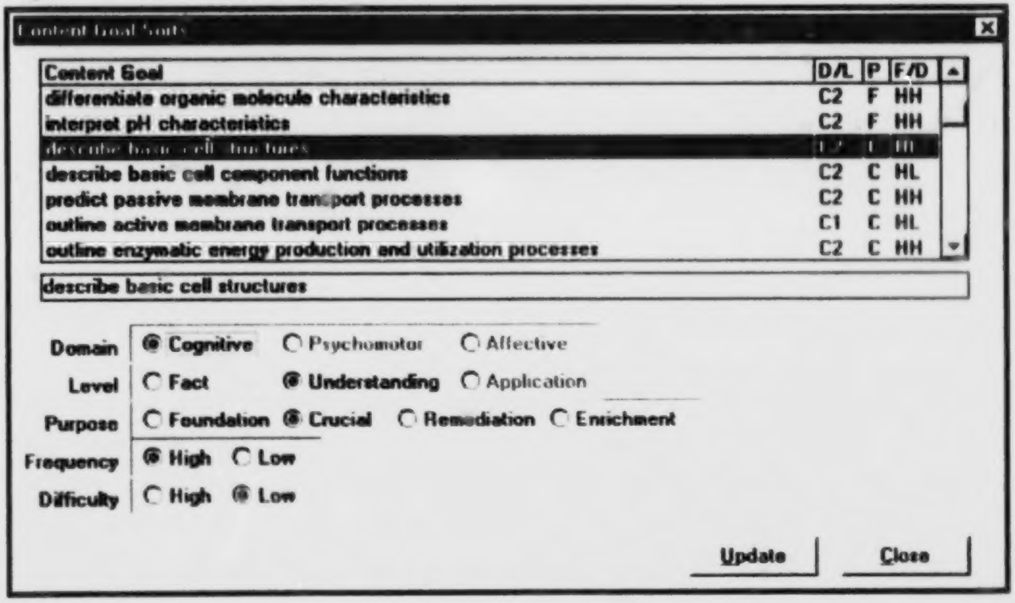
- ☐ 1. Read Info & Insights.
- ☐ 2. From within the Content Goal Writing and Editing Screen (**Figure 7**), take these actions:
  - ☐ Select **Close**.
  - ☐ Select **Sorts**.
- ☐ 3. CourseBuilding will automatically go to the first content goal in your list. If this has already been sorted, select a new one.
- ☐ 4. Repeat these steps as you sort each content goal:
  - ☐ Select content goal.
  - ☐ Identify domain and level.
  - ☐ Identify purpose.
  - ☐ Identify frequency and difficulty.
  - ☐ Select **Update.**
- ☐ 5. Select **Close** when done.

Important Notes:

1. The **Update** button will not appear until all five sorts have been made. If you advance to a new content goal without first selecting **Update**, CourseBuilding will not record your sorts. *There is no message box to remind you of this.*

2. CourseBuilding knows specific information about the domain and level of each verb in its database. Its recommendations are shown in **black**. If you select any of the red options, you will probably get a warning beep (depending on your computer's configuration), and a message box when you update your selections. *Give the information in such blocks your serious consideration.*

Figure 9. Content Goal Sorts



Content Goal Sorts

Content Goal	D/L	P	F/D
differentiate organic molecule characteristics	C2	F	HH
interpret pH characteristics	C2	F	HH
describe basic cell structures	C2	C	HL
describe basic cell component functions	C2	C	HL
predict passive membrane transport processes	C2	C	HH
outline active membrane transport processes	C1	C	HL
outline enzymatic energy production and utilization processes	C2	C	HH

describe basic cell structures

Domain ● Cognitive ○ Psychomotor ○ Affective
Level ○ Fact ● Understanding ○ Application
Purpose ○ Foundation ● Crucial ○ Remediation ○ Enrichment
Frequency ● High ○ Low
Difficulty ○ High ● Low

Time Required: 30 - 60 seconds per content goal

Module 10

Info & Insights . . .

Think back to when you first set up your institution and started a new course. Recall that the first significant recommendation CourseBuilding made was to write a given number of content goals. Experience tells me that this number was probably much higher than you anticipated.

If such is the case, here is where you will begin to address any concerns. How? By making a variety of *sorting* decisions that will influence how each content goal is addressed in your course, and how students will be evaluated relative to it. Perhaps you already informally make many of these sorting decisions as you teach a course. So, as with writing content goals, CourseBuilding formalizes the process and helps you use the results more effectively -- and efficiently.

These are six types of sorts:

1. Domain of learning;
2. Level of learning,
3. Purpose,
4. Frequency (or importance),
5. Difficulty, and
6. Chronology (sequence).

> The first 5 sorting decisions are made sequentially for each individual content goal. The chronology sort (6) is done in Module 11 in a setting which includes all content goals.

With all these sorts but the last, CourseBuilding will help you make proper decisions based on what it knows about the action verb in each content goal. Later, in LessonBuilding, each sort will help you determine how to address the content to the best benefit of you and your students.

With a little experience, you will progress quickly through these decisions. Until you reach that point, refer to **Appendix D**. The tables it contains will give you the basic information needed to make sorting decisions quickly and effectively.

NOTE: You always have the option to overrule CourseBuilding's recommendations as you sort content goals. However, on those inevitable occasions when you don't agree with a program recommendation, take the opportunity to think about what you really intend for the student to do. You may see the need to revise the content goal, or possibly write a new one. Additionally, if your profession uses certain verbs in a unique way, you may wish to go into the verb list (Module 9) and edit the domain and/or level information CourseBuilding has on that verb.

Before You Progress . . .

. . . Make sure you sort all content goals before you go to the next module.

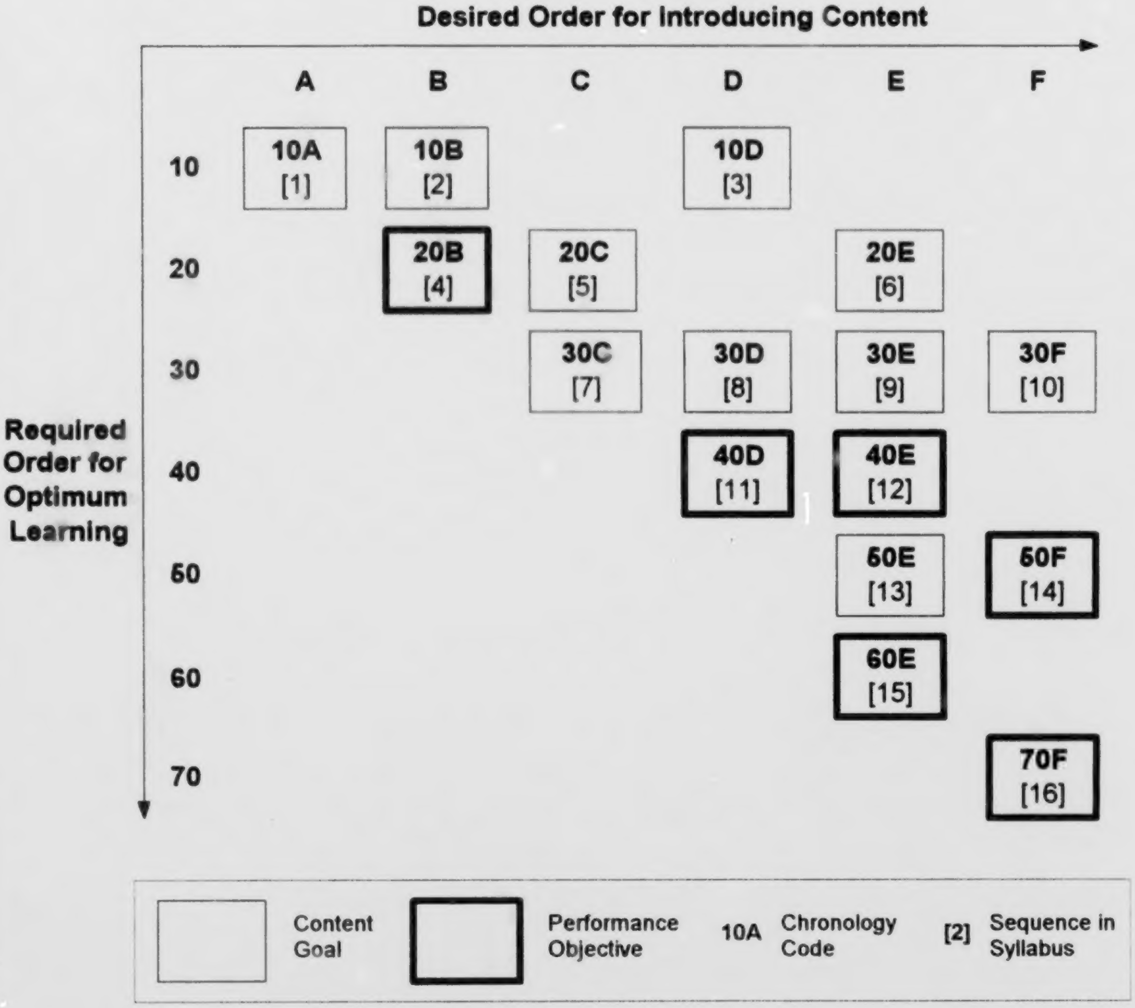
For More Information . . .

. . . About content goal sorts, refer to the IPSI Book (**F2**) and follow these links:

- ☐ Part I: Planning
- ☐ Chapter 1: Specifying Instructional Content
- ☐ Processing Content Goal Statements
- ☐ Use >> to progress through the several screens of information on content goal sorts.

Time needed: 15-20 minutes

Figure 10. Chronology Sort Model with Performance Objectives Identified


Desired Order for Introducing Content
Required Order for Optimum Learning
Content Goal
Performance Objective
10A Chronology Code
[2] Sequence in Syllabus

	A	B	C	D	E	F
10	10A [1]	10B [2]		10D [3]		
20		20B [4]	20C [5]		20E [6]	
30			30C [7]	30D [8]	30E [9]	30F [10]
40				40D [11]	40E [12]	
50					50E [13]	50F [14]
60					60E [15]	
70						70F [16]

Info & Insights . . .

The chronology sort is where you sequence content goals for maximum learning effectiveness. As with writing content goals, this sort emphasizes student learning needs over instructional preferences. But both are taken into consideration because of the techniques used.

This procedure has several peripheral benefits in that it gives you a comprehensive look at all content goals as they relate to one another, instead of focusing on one at a time. As a result, this sort will help you:

- see if content goals are too narrowly or broadly stated;
- spot subject matter gaps and duplications in the curriculum, and;
- determine where performance objectives will be needed.

Refer now to the model in **Figure 10.** Each column (A, B, etc.) includes content goals that are related to each other for learning purposes, regardless of spacing. In other words:

- 10A stands alone. It isn't a prerequisite to any other learning.
- 10B is prerequisite to 20B (recall that a performance objective includes a content goal as one of three components).
- 10D and 30D are prerequisites to 40D.

So in conducting this sort, your first job is to group all content goals into columns of related subject matter and activities, with the most fundamental (or prerequisite) material at the top of each column. You then sequence the columns from left to right according to your instructional preferences.

As you conduct this sort, there are two fundamentals to keep in mind: 1). Learning should proceed from simple to complex, and 2). Learning should generally progress from the cognitive to the psychomotor domain. In applying these principles, simply refer to the domain and level sorts you did in Module 10. **Note:** You may wish to address affective content early in the course, but evaluate student affective performance much later.

How do content goals on the same *row* relate to each other? Only in that they are appropriate to the course; otherwise there is no direct relationship for learning purposes.

But why does Figure 10 have gaps in it? You may or may not have these in your final sort. Note how the content goals will be listed in the syllabus (from 1 to 16). If you want the syllabus list to flow chronologically throughout the semester, you may make some vertical (not horizontal) shifts in the chart to meet this goal.

Before You Progress . . .

. . . The mechanics of conducting the chronology sort offer two unique options, as you'll see in Module 12. Before you get into this, make sure you have at least an hour available.

For More Information . . .

. . . about chronology sort principles, refer to Appendix E, *Two Chronology Sort Models: What's The Difference?*

Time needed: 5-10 minutes

Conducting the Chronology Sort, Part 2: Methodologies

✍ Step by Step . . .

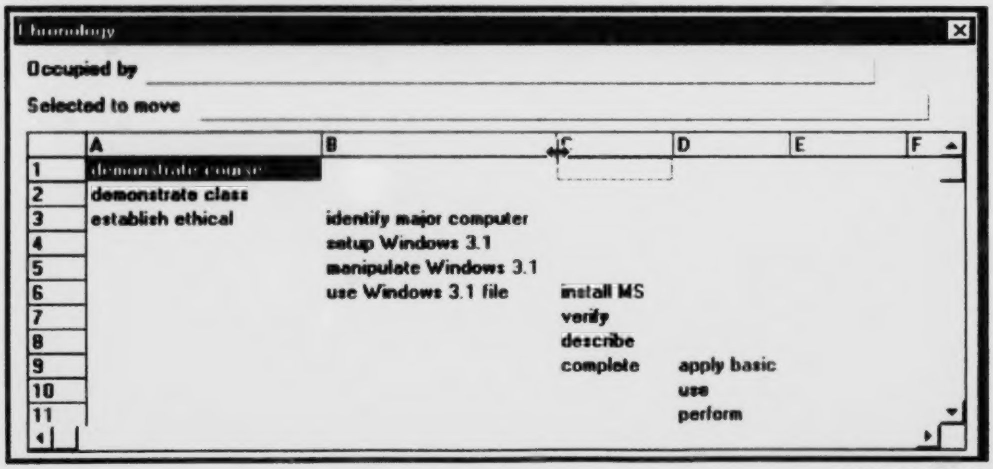
☐ 1. Read Info & Insights.
☐ 2. From the *Content Goal Details* screen, select **Chronology**.

■ To use the **on-screen spreadsheet** method:
☐ 1. Select a content goal from the top row.
Note 1: Content goals will be listed randomly. Use the horizontal scroll bar to locate each content goal.
Note 2: CourseBuilding will *not* include any content goals not previously sorted.
☐ 2. Move the cursor to where you want to place the content goal.
☐ 3. Click the left (or main) mouse button to move the content goal.
☐ 4. Select **Update** every 5-10 minutes to save changes.
Note 3: Read the **What If** section in Info & Insights as needed.

■ To use the **manual entry** method:
☐ 1. From the *Content Goal Details* screen, select **Report**.
☐ 2. Before printing this list, increase the line spacing and font size to meet your preferences. Refer to Appendix F as needed to use the IPSI report function.
☐ 3. Print the entire report.
☐ 4. Cut individual content goals so that there is one per slip of paper. Keep sorting decisions connected to each slip.

■ To use the **manual entry** method **(Cont)**:
☐ 5. Manually sort all content goals as described in Module 11.
☐ 6. Make any desired editorial changes; incorporate any new content goals into the matrix as needed.
☐ 7. Enter chronology sort codes onto each slip.
☐ 8. Separate any added content goals from the layout.
☐ 9. In picking up all remaining content goals, keep them in alphabetical order. If you changed any verbs, use the original verb for alphabetizing purposes.
☐ 10. Return to the *Content Goal Wording* screen and add new content goals. Make any editorial changes as needed. Sort these content goals and add them in with the others (alphabetically).
☐ 11. From the *Content Goal Details* screen, select **Chronology**, then **Manual Entry**.
☐ 12. Enter the chronology codes for each content goal as follows:
  □ Select a content goal on the screen.
  □ Enter its sorting codes in the blocks at the bottom of the screen. **Note:** Use the **Tab** key to automatically advance through these blocks for each successive content goal.
☐ 13. Select **Update** to save your entries.
☐ 14. Select **Close** when finished.

Figure 11. On-screen Chronology Sort



Occupied by

Selected to move

	A	B	C	D	E	F
1	demonstrate course					
2	demonstrate class					
3	establish ethical	identify major computer				
4		setup Windows 3.1				
5		manipulate Windows 3.1				
6		use Windows 3.1 file	install MS			
7			verify			
8			describe			
9			complete	apply basic		
10				use		
11				perform		

BEST COPY AVAILABLE

Time Required: 45 - 90 minutes Module 12

Info & Insights . . .

CourseBuilding gives you two options for conducting the chronology sort. The first is a screen which has a **spreadsheet grid** design to it **(Figure 11)**. It allows you to select a content goal and place it where you wish on the grid. The second option is to do a *sans computer* sort wherein you print out the content goals and physically sort them on a table. You then code them according to the example shown in Figure 10 and manually enter these codes into the computer. This **manual entry** option, though tedious, is generally the most practical for beginning users. Here are some guidelines to help you decide which method to use:

Use the **on-screen spreadsheet** method if:
... there aren't many content goals to sort (about 20 or less) or;
... you are very comfortable with using a mouse or,
... you plan to write and process small numbers of content goals at a time.

Use the **manual entry** method if:
... more than 1-2 people are involved in conducting the sort, or
... you want to manually edit or add content goals as you progress, or
... you want to easily refer to previous sorting decisions.

One more thing about using the manual entry method: Doing so will require you to create a **Report**, which is based on Microsoft Word®. Refer to Appendix F, *Working with Reports*, for a brief primer on its use if necessary.

What If . . .

. . . You want to make a "clean start" with the on-screen chronology sorting process? By taking one of these options:

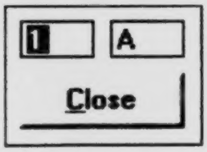
■ If you *have not* yet saved your work, simply close the screen without saving your work.

■ If you *have* saved your work, take these steps:

☐ 1. From the *content Goal Details* screen, select **Chronology**. Then select **Manual Entry**.

☐ 2. Alternate between the **Delete** and **Tab** keys to clear out the sorting codes previously saved. Do not press the **Close** button yet. If you do, your erasures will not be saved.

☐ 3. Locate the first content goal you want to address in the course. Code it **1A**. Then select **Update** and **Close**.



☐ 4. Select **Chronology** and start again.

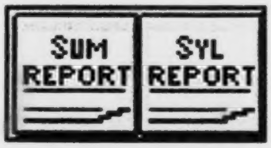
Before You Progress . . .

. . . If you "weeded out" any content goals during the chronology sort, save them. They may be useful as subgoals when you start using LessonBuilding.

For More Information . . .

Step by Step . . .

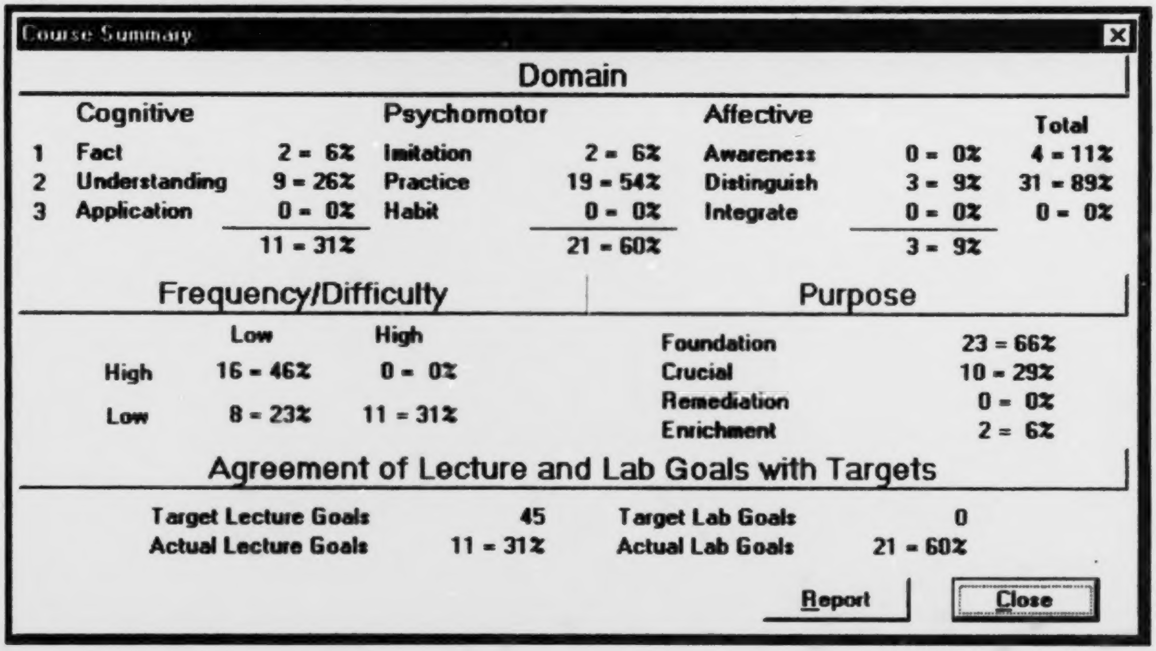
☐ 1. From within the course, select the **Sum Report** (left) button:



☐ 2. Read Info & Insights.

☐ 3. To print the summary, select **Report**. Refer to **Appendix F**, *Working with IPSI Suite Reports* as needed.

Figure 12. Course Summary



Domain

	Cognitive		Psychomotor		Affective		Total
1	Fact	2 = 6%	Imitation	2 = 6%	Awareness	0 = 0%	4 = 11%
2	Understanding	9 = 26%	Practice	19 = 54%	Distinguish	3 = 9%	31 = 89%
3	Application	0 = 0%	Habit	0 = 0%	Integrate	0 = 0%	0 = 0%
		11 = 31%		21 = 60%		3 = 9%	

Frequency/Difficulty

	Low	High
High	16 = 46%	0 = 0%
Low	8 = 23%	11 = 31%

Purpose

Foundation	23 = 66%
Crucial	10 = 29%
Remediation	0 = 0%
Enrichment	2 = 6%

Agreement of Lecture and Lab Goals with Targets

Target Lecture Goals	45	Target Lab Goals	0
Actual Lecture Goals	11 = 31%	Actual Lab Goals	21 = 60%

Interpreting Frequency & Difficulty

		DIFFICULTY	
		Low	High
FREQ	High	16 = 46%	0 = 0%
	Low	8 = 23%	11 = 31%

Time Required: 5 - 10 minutes Module 13

Info & Insights . . .

The course summary offers one of the significant moments of truth regarding your efforts so far. But while it guarantees an analytical perspective that you've never had before, it will not admonish you if any principles are violated.

Still, you should review it carefully and consider if it displays a course with the kind of educational balance you expect. This review can be especially enlightening if you teach a basic or introductory course and a related advanced course. This provides an opportunity to objectively compare the two.

Of the different headings in this table, **Purpose** is the only one for which guidance is available. As outlined in Appendix D, here are the standard guidelines.

Foundation	Typically about 80% or more of all content goals
Crucial	Should not exceed 10%*
Enrichment	Should not exceed 10%
Remediation	Should not exceed 10%

There are no guidelines governing content in the cognitive, psychomotor, or affective domains. Still, I would encourage you to include one or two content goals related to the affective domain. For more guidance on this, refer to Appendix F, *Exposing the Secret Curriculum: Writing and Evaluating Content in the Affective Domain.*

* The amount of crucial content is strongly influenced by the subject matter. While 10% is appropriate in most academic courses, those related to legal, medical, or safety issues may have a considerably higher percentage of crucial content.

Before You Progress . . .

For More Information . . .

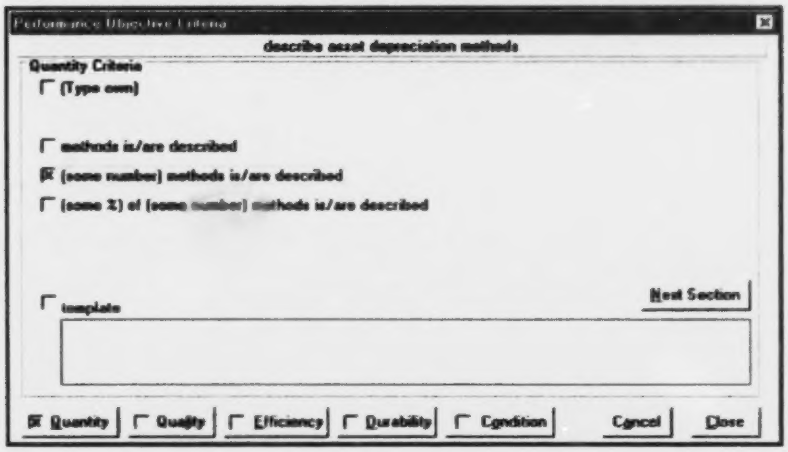
✍ Step by Step . . .

- ☐ 1. Read Info & Insights.
- ☐ 2. From the *Content Goal Details* screen, select **Performance Objective**.
- ☐ 3. On the *Performance Objective* screen, select the content goal on which the performance objective will be based.
- ☐ 4. Select **New Performance Objective**.

  Note 1: Notice the buttons for Quantity, Quality, Efficiency, Durability, and Condition in **Figure 13**. Proceed from left to right with these buttons as you select templates.

  Note 2: Consider the standards to be met when setting performance conditions .
- ☐ 5. When all appropriate templates are identified, select **Close**.
- ☐ 6. In the new screen (**Figure 14**), a draft performance objective is given. Use standard word processing techniques to edit it to meet your specific needs.
- ☐ 7. When finished editing, select **Save New PO** and **Close**.
- ☐ 8. Repeat this process wherever performance objectives are needed.

Figure 13. Templates for a Cognitive Performance Objective



Performance Objective Criteria

describe asset depreciation methods

Quantity Criteria

☐ (Type own)

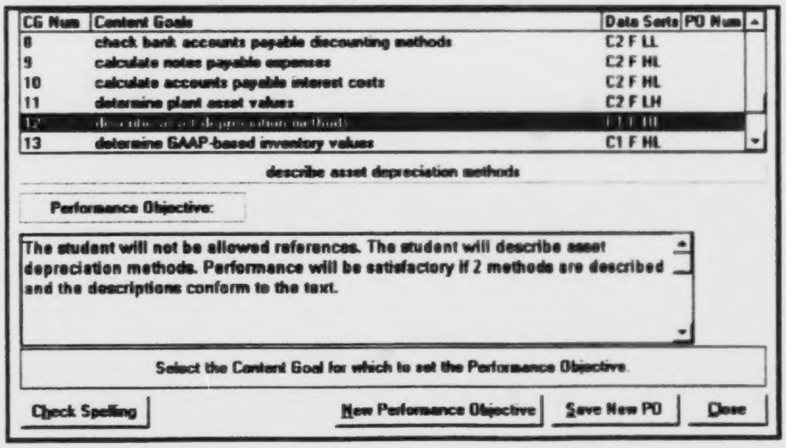
☐ methods is/are described

☒ (some number) methods is/are described

☐ (some %) of (some number) methods is/are described

☐ template

Figure 14. Performance Objective Editing Screen



CG Num	Content Goals	Data Sorts	PO Num
8	check bank accounts payable discounting methods	C2 F LL	
9	calculate notes payable expenses	C2 F HL	
10	calculate accounts payable interest costs	C2 F HL	
11	determine plant asset values	C2 F LH	
12	describe asset depreciation methods	[illegible]	
13	determine GAAP-based inventory values	C1 F HL	

describe asset depreciation methods

Performance Objective:

The student will not be allowed references. The student will describe asset depreciation methods. Performance will be satisfactory if 2 methods are described and the descriptions conform to the text.

Select the Content Goal for which to set the Performance Objective.

Time Required: 5 - 10 minutes per performance objective

Module 14

Info & Insights . . .

As you have seen, content goals powerfully specify *what* students will do. But students also want to know *how* they will be evaluated. That is the function of performance objectives.

As described in Module 3, performance objectives add two additional elements to content goals: the condition(s) under which students are evaluated, and the standard(s) they must meet to be successful.

CourseBuilding makes performance objective development easy and accurate. It includes a series of pre-drafted condition and standard *templates* that you can select as needed. Then it generates a draft performance objective that you edit to meet specific needs. (To learn how to add you own templates, see Appendix H.)

There are no guidelines about how many performance objectives you should write -- your course drives this. As shown in Module 3, you may write a performance objective for a single content goal or for a group of related content goals. For the latter, it is often practical to base the performance objective on the final content goal in a column, as determined by the chronology sort. You may also want to write performance objectives on content goals identified as *crucial* in the purpose sort (see Appendix D).

Table 4
Performance Objective Components

Condition(s). Under what conditions will the student be evaluated? *The student:*
- may / may not use references
- will be evaluated in a lab /clinical / shop setting
- will / will not be provided tools / equipment / materials

Behavior. This may be:
- an individual content goal, or
- a group of 2-5 related content goals

Standard(s). These are based on:
- some *quantity* of something produced
  - ...three book reports
  - ...five flip charts
- the *quality* of something produced:
  - ...of at least 800 words, plus bibliography
  - ...consistent with accrediting agency specifications
- the *durability* of something:
  - ...capable of supporting some weight capacity
- the *efficiency* with which something is produced:
  - ...completed in 60 minutes or less

In drafting performance objectives, you will see some template and procedural variations based on the content goal's domain. **Step By Step and Figures 13 / 14** refer to drafting a cognitive performance objective.

Before You Progress . . .

. . . Make sure you have written performance objectives for all relevant content goals.

For More Information . . .

. . . About variations related to cognitive, psychomotor, and affective performance objectives, refer to the IPSI book (**F2**) and follow these links:

- ☐ Part I: Planning
- ☐ Chapter 2: Writing Performance Objectives
- ☐ Follow the links appropriate to your needs.

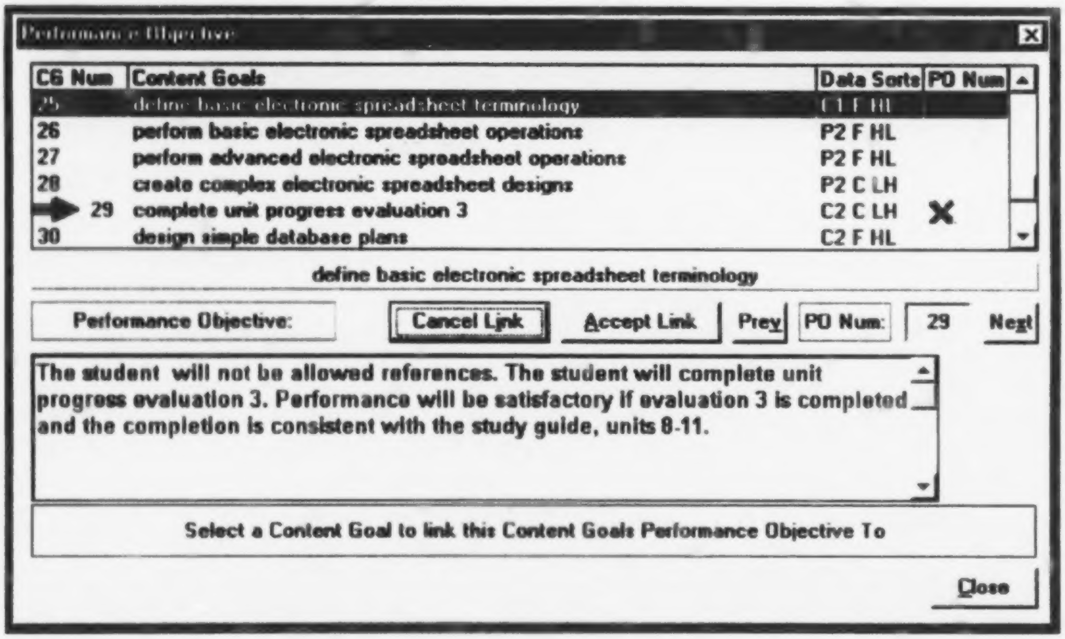
Time needed: 10-30 minutes

Linking Several Content Goals to a Performance Objective

Step by Step . . .

- ☐ 1. Read Info & Insights.
- ☐ 2. From the *Content Goal Details* screen, select **Performance Objective**.
- ☐ 3. Click once on the content goal to be linked (not the performance objective).
- ☐ 4. Click once on the **Link** button.
- ☐ 5. Refer to **Figure 15**. Notice the *CG Num* column on the screen. In that column, an arrow will point to the next available performance objective.
  - ☐ If the correct PO is identified, select **Accept Link**.
  - ☐ If the correct PO is not identified, use the **Prev** and **Next** button to locate the correct performance objective.
- ☐ 6. Select **Close** when all links have been made. **Note:** Each content goal should either have its own performance objective or be linked to one.

Figure 15. Making Content Goal Links



CG Num	Content Goals	Data Sorts	PO Num
25	define basic electronic spreadsheet terminology	C1 F HL	
26	perform basic electronic spreadsheet operations	P2 F HL	
27	perform advanced electronic spreadsheet operations	P2 F HL	
28	create complex electronic spreadsheet designs	P2 C LH	
➡ 29	complete unit progress evaluation 3	C2 C LH	✕
30	design simple database plans	C2 F HL	

define basic electronic spreadsheet terminology

Performance Objective:

The student will not be allowed references. The student will complete unit progress evaluation 3. Performance will be satisfactory if evaluation 3 is completed and the completion is consistent with the study guide, units 8-11.

Select a Content Goal to link this Content Goals Performance Objective To

Info & Insights . . .

Once upon a time, it was assumed that each content goal would be the basis for a performance objective, resulting in a 1:1 numerical ratio between the two. This is no longer the case. Indeed, it is often more practical to have one performance objective for up to 5 related content goals.

As you have already seen, the chronology sort helps you determine where the performance objectives should be placed. Such connections are possible through the process of *linking* a number of content goals to a single performance objective that effectively consolidates all related learning and skills development.

In addition to the convenience of linking content, there are at least four reasons to do so:

- Ideally, all content goal sorted as *Foundation* or *Crucial* should be tied to a performance objective. (If the content isn't important enough to be evaluated, you should consider whether it should be in the in the course.)
- Performance objectives exist to communicate evaluation information to students. Where content goal linking is involved, students also need to know which content goals are related to a given performance objective.
- The process helps students understand the relevance of certain course content. Relevance is an important issue in efforts to improve learning and retention.
- This linking process will substantially ease assembling examinations later with ExamBuilding.

Note: At your option, the final course syllabus will identify what content goals are linked to each performance objective. Until that occurs, I recommend that you you print a report of all content goals and manually identify these relationships for your personal use. Doing so may be very useful in Module 16.

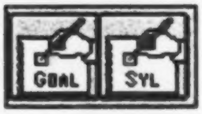
Before You Progress . . .

. . . Make sure each content goal either has or is linked to the appropriate performance objective.

For More Information . . .

✍ Step by Step . . .

☐ 1. From within your course, select the **Syllabus** (right) button at the top of the screen.



☐ 2. Your screen will include six "tab cards." (**Figure 16**). Complete all cards (except *Evaluation*) to finish the syllabus. Refer to Info & Insights for notes on each section.

■ **To complete the Evaluation tab card:**

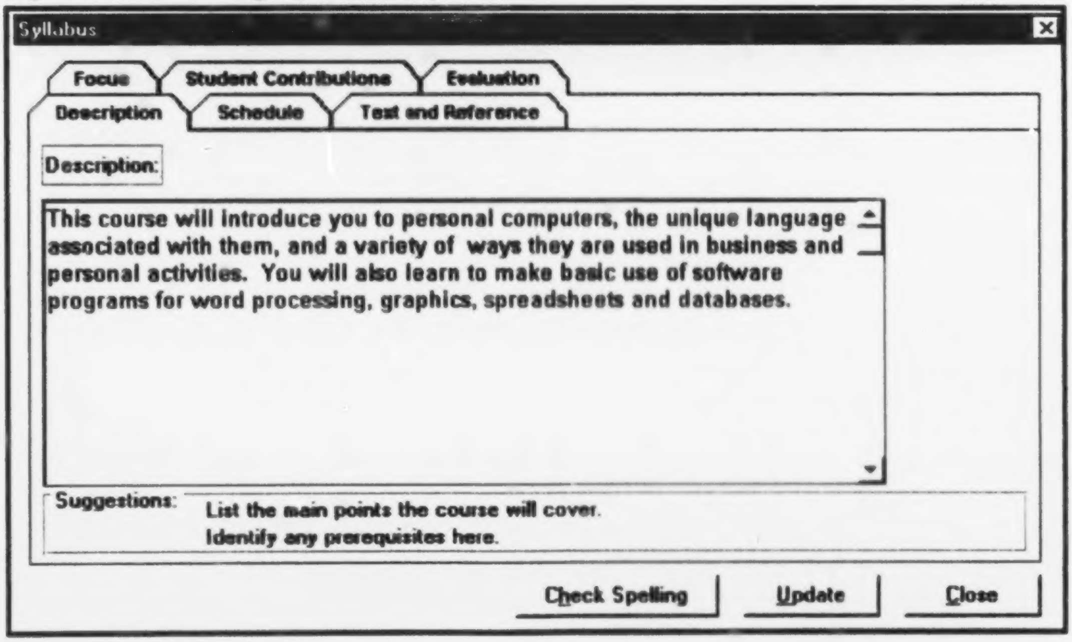
☐ 1. Select the *Evaluation* tab, then select **Create New Evaluation Text**
  - ☐ RECOMMENDATION 1: Answer **Yes** to the question: "Do you wish to automatically generate a course evaluation with points broken out by letter?"
  - ☐ RECOMMENDATION 2: Answer **No** to the question: "Do you wish to use PLUS and MINUS grades?"

☐ 2. If you selected *yes* for recommendation 1, enter the point values you desire beside each selected content goal.

☐ 3. Select **Update** and **Close** when finished.

■ **To print your syllabus:**
. . .Refer to Appendix F, *Working with IPSI Suite Reports*.

Figure 16. Finalizing the Course Syllabus



Description:

This course will introduce you to personal computers, the unique language associated with them, and a variety of ways they are used in business and personal activities. You will also learn to make basic use of software programs for word processing, graphics, spreadsheets and databases.

Suggestions: List the main points the course will cover.
Identify any prerequisites here.

Info & Insights . . .

> ***The end is near.***
> *Unknown (but oft quoted)*

Congratulations! You are very close to completing your new syllabus. Possibly the most challenging creative work in the IPSI Suite is behind you. To finish out your syllabus involves little more than filling in some basic details. Once this is done, you will have designed a syllabus which fills the most common needs of your students, you, and other instructors.

In the final steps covered here, each CourseBuilding "tab card" will guide you through completing that component. For example, notice the suggestions offered at the bottom of **Figure 16**. Such comments will be a common feature as you progress into LessonBuilding and ExamBuilding.

Here are a few additional recommendations you may refer to:

Description. Enter the course description exactly as it is stated in the college catalog. Lecture/lab hours will automatically be entered for you, but you may wish to enter the number of semester/credit hours.

Schedule: Keep schedule information basic, including class days and time, and perhaps your office hours. If you normally include a comprehensive class schedule outlining class sessions, study materials, assignments due, etc., include such information in a separate addendum (but refer to it here).

Text and References. Be as comprehensive as possible here. In future lesson plans and modules, LessonBuilding will automatically include these materials as needed for your editorial convenience.

Focus. This is your chance to personalize your approach or philosophy regarding how the curriculum will be developed. This is highly appropriate where there is more than one instructor teaching the course.

Evaluation. CourseBuilding uses a point-based system for determining final grades. Points values are matched to relevant content goals. You can opt to use your current evaluation system, but you may wish to read the material referenced in **For More Information** before you complete the Evaluation tab..

Before You Progress . . .

. . . You now have the option to continue with Modules 17-26 on LessonBuilding, or Modules 27-40 on ExamBuilding, based on your personal needs and goals.

These modules will help you progress very rapidly in putting your new syllabus (and your students) to work. Have fun as you learn and progress in the IPSI Suite.

For More Information . . .

. . . about the characteristics and merits of a point-based evaluation system:

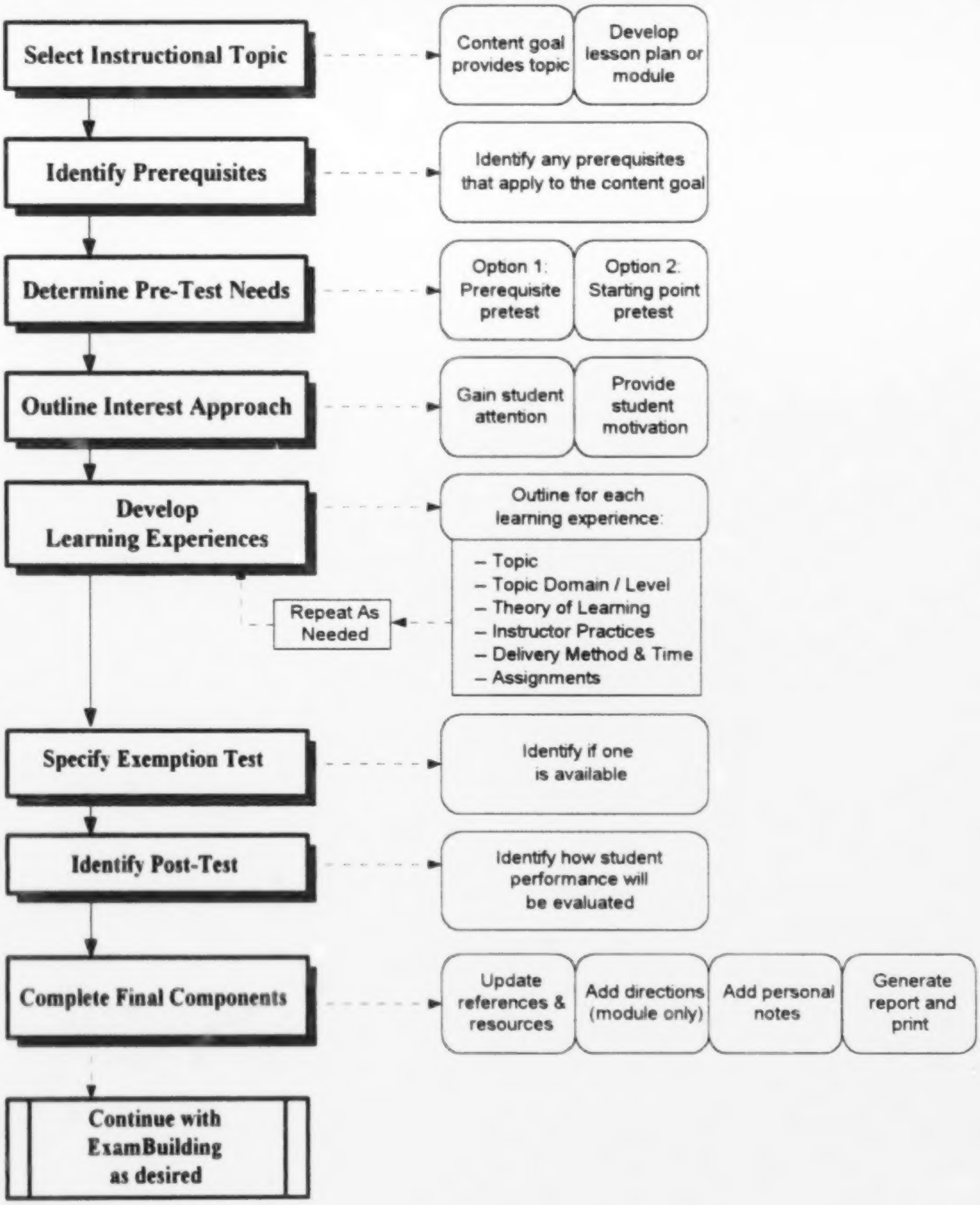
- ☐ Press **F2** to access the IPSI Book
- ☐ Progress through the menus as follows:
  - ☐ Part I: Planning
  - ☐ Chapter 3: Developing a Performance Syllabus
  - ☐ Read Establishing Evaluation Systems and Using Points

Time needed: 5-10 minutes

. . . on how to set up and use a point-based grading system, read **Appendix I**, *Establishing a Point-based Grading System*.

Time needed: 10-60 minutes

Table 5. The IPSI Lesson Plan and Module Development Process


Select Instructional Topic
Content goal provides topic
Develop lesson plan or module
Identify Prerequisites
Identify any prerequisites that apply to the content goal
Determine Pre-Test Needs
Option 1: Prerequisite pretest
Option 2: Starting point pretest
Outline Interest Approach
Gain student attention
Provide student motivation
Develop Learning Experiences
Outline for each learning experience:
– Topic
– Topic Domain / Level
– Theory of Learning
– Instructor Practices
– Delivery Method & Time
– Assignments
Repeat As Needed
Specify Exemption Test
Identify if one is available
Identify Post-Test
Identify how student performance will be evaluated
Complete Final Components
Update references & resources
Add directions (module only)
Add personal notes
Generate report and print
Continue with ExamBuilding as desired

Time Required: 10 - 15 minutes Module 17

Info & Insights . . .

1. ***Tell them what you're going to tell them.***
2. ***Tell them.***
3. ***Tell them what you told them.***

– Ancient educational paradigm

Words like *facilitate*, *enable*, make *relevant*, and *empower* are showing up with increasing frequency in all things educational. At the same time, educational delivery options are "virtually" exploding: on-line learning, computer-based instruction, and their variations would seem to be in competition with a host of more traditional instructional techniques.

How do you decide what approach to use? How do you decide when to use it? How do you determine that it's appropriate to student needs? How do you get -- and keep -- students involved in the learning experience? How can you customize instruction for special situations?

As much as you cope with issues such as these, LessonBuilding will help you keep perspective by focusing on two fundamental questions:

1. What is the expected student performance?
2. What learning experiences will most effectively develop students' ability to perform as specified?

CourseBuilding helped answer the first question; content goals form the basis for lesson plans (LPs) and/or modules that are appropriate to student performance needs. The lesson title itself uses the gerund form of the action verb in your content goal:

Content goal:	(The student will) analyze financial management techniques.
Lesson title:	Analyzing financial management techniques.

With LessonBuilding, you'll answer the second question, one content goal at a time. Since the content goal already answers the *what* question, LessonBuilding emphasizes the *how* question: How will the student be prepared to perform as required?

Table 5 makes LessonBuilding look as time-consuming as CourseBuilding; *this is not so*. By writing content goals, the target was set. Focusing other components will be much easier than you might think. LessonBuilding provides the structure needed to ask the right questions at the right times. It also offers many template choices for you to select and edit at various stages of LP/module development. When you're done, your most fundamental questions about content delivery will be answered. And it will take only 15-20 minutes or less . . . with a little practice.

Before You Progress . . .

. . . Did you "inherit" a syllabus or a set of content goals without having helped to develop them? If so, take some time now to read the following materials in the order listed here:

☐ Introduction and Overview
☐ Module 1
☐ Module 2
☐ Appendix A
☐ Module 3
☐ Module 10
☐ Appendix D

Time needed: 30-60 minutes

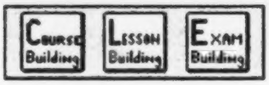
For More Information . . .

Deciding What to Produce: Lesson Plan or Module?

Step by Step . . .

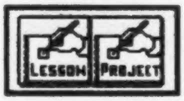
☐ 1. Start the IPSI Suite and open your institution.

☐ 2. Select the yellow **LessonBuilding** button.


Course Building
Lesson Building
Exam Building

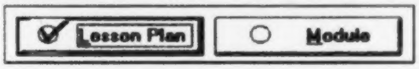
☐ 3. Open the desired course. **Note:** You cannot create a new course or modify content goals within LessonBuilding.

☐ 4. Select the **Lesson** button. The screen in **Figure 17** will appear.


LESSON
PROJECT

☐ 5. Read Info & Insights.

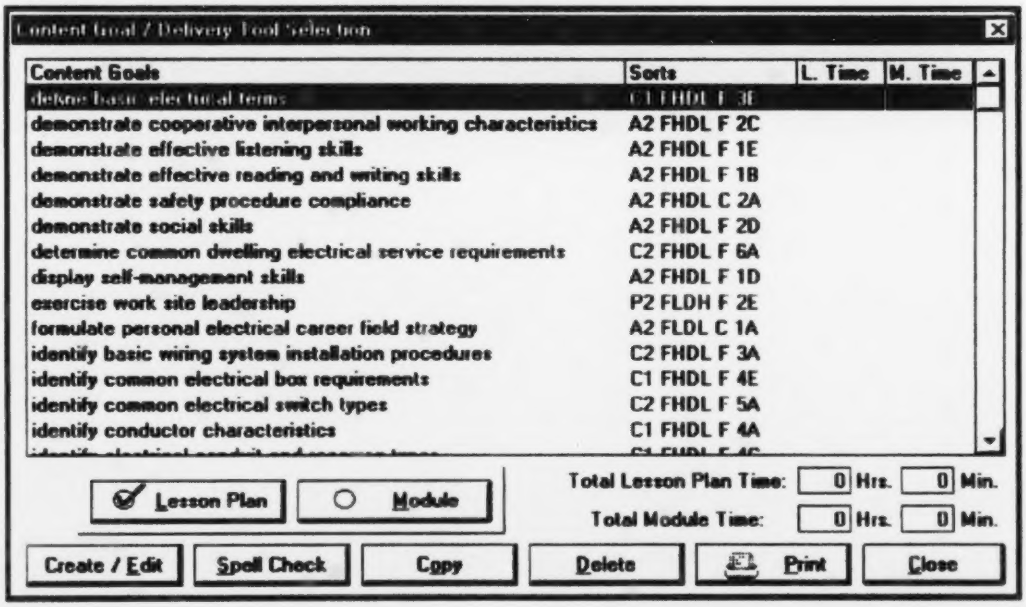
☐ 6. Select the content goal you wish to develop.


Lesson Plan
Module

☐ 7. Choose the **Lesson Plan** or **Module** button.

☐ 8. Select the **Create / Edit** button and continue with Module 19 when ready.

Figure 17. Making Initial LessonBuilding Selections

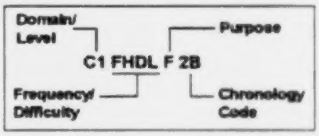

Lesson Plan
Module
Create / Edit
Spell Check
Copy
Delete
Print
Close

Content Goal / Delivery Tool Selection

Content Goals	Sorts	L. Time	M. Time
define basic electrical terms	C1 FHDL F 3E		
demonstrate cooperative interpersonal working characteristics	A2 FHDL F 2C		
demonstrate effective listening skills	A2 FHDL F 1E		
demonstrate effective reading and writing skills	A2 FHDL F 1B		
demonstrate safety procedure compliance	A2 FHDL C 2A		
demonstrate social skills	A2 FHDL F 2D		
determine common dwelling electrical service requirements	C2 FHDL F 6A		
display self-management skills	A2 FHDL F 1D		
exercise work site leadership	P2 FLDH F 2E		
formulate personal electrical career field strategy	A2 FLDL C 1A		
identify basic wiring system installation procedures	C2 FHDL F 3A		
identify common electrical box requirements	C1 FHDL F 4E		
identify common electrical switch types	C2 FHDL F 5A		
identify conductor characteristics	C1 FHDL F 4A		

Total Lesson Plan Time: 0 Hrs. 0 Min.

Total Module Time: 0 Hrs. 0 Min.


Domain/
Level
Purpose
C1 FHDL F 2B
Frequency/
Difficulty
Chronology
Code

Time Required: 5 - 10 minutes **Module 18**

Info & Insights . . .

> ***I am always ready to learn, although I do not always like being taught.***
> *Sir Winston Churchill*

How will the student be prepared to perform as required?

This question has several dimensions. So does LessonBuilding. The first dimension regards how the instructional plan will be developed: as a lesson plan or as a module -- or perhaps both.

As stated in the introduction, a lesson plan is designed for your use to deliver instruction to a group of individuals. The module is designed to be a handout for the student(s) who must complete a series of activities as outlined in the module.* As you saw in Table 5 (Module 17), their design processes are essentially identical, but the latter option saves valuable in-class time for the content where it is most needed.

How do you decide whether to produce a lesson plan or module? The answer lies within the content goal sorting decisions made with CourseBuilding (Module 10 and Appendix D). Begin by considering the sorts for frequency (importance) and difficulty.

If the frequency (importance) is:	And the difficulty is:	You should plan to create a:
High	Low	Lesson plan and/or module
High	High	Lesson plan and/or module
Low	Low	Module
Low	High	Module

The content goal's purpose will further help you specify what to prepare. If the purpose is *critical*, this will generally indicate an increased need for a lesson plan. If the purpose is *enrichment* (which is typically used for the highest achievers in your class), you should simply develop a module individualized to the needs of these students. Ideally, *remediation* content should be covered with a module, but the decision should be based on content difficulty and student needs for in-class instruction.

Before You Progress . . .

For More Information . . .

. . . Refer to Appendix D to review information about content goal sorts and their codes (as depicted below Figure 17).

Time needed: 5-10 minutes

. . . The IPSI Book contains a wealth of information about lesson planning and modules. Learn more about them, press **F2** and follow these links:

- ☐ Part II: Delivering
  - ☐ Chapter 5. Maximizing Group Performance Instructional Delivery
  - ☐ Chapter 6. Building Self-paced Instructional Modules

Time needed: 20-30 minutes per chapter.

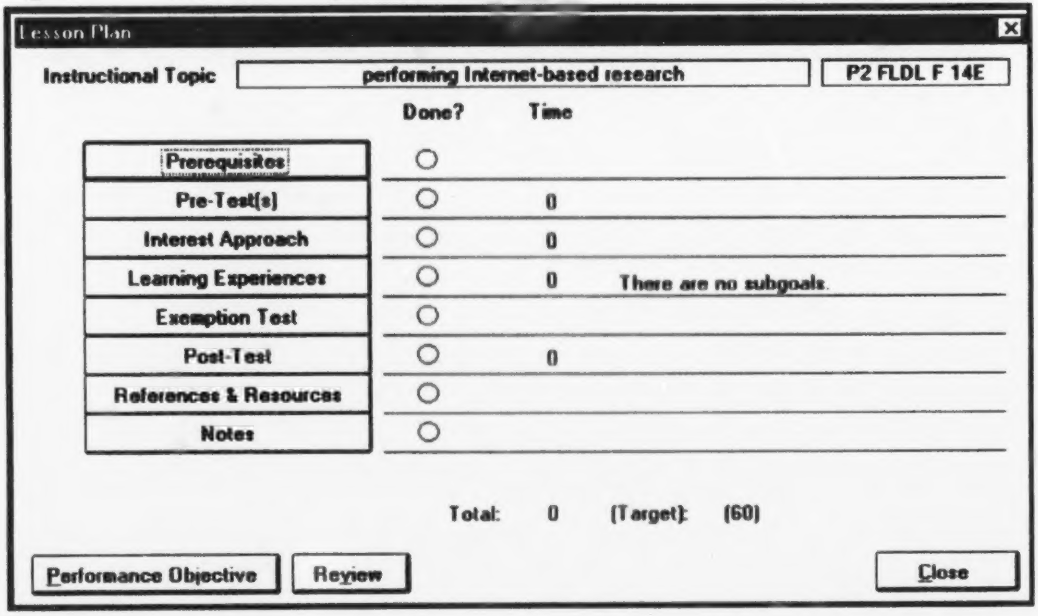
---

*LessonBuilding modules are similar in function to the modules in this book, but are different in design and content components.

✍ Step by Step . . .

☐ 1. Read Info & Insights.
☐ 2. Make any desired changes in the LessonBuilding settings section.
☐ 3. When you're ready, click the **Prerequisites** box as shown in **Figure 18** and continue with Module 20.

Figure 18. Lesson Planning Checklist



Lesson Plan

Instructional Topic performing Internet-based research | P2 FLDL F 14E

	Done?	Time	
Prerequisites	○		
Pre-Test(s)	○	0	
Interest Approach	○	0	
Learning Experiences	○	0	There are no subgoals.
Exemption Test	○		
Post-Test	○	0	
References & Resources	○		
Notes	○		

Total: 0 (Target): (60)

Note: The checklist (and process) for creating a module is almost identical to this one used for lessons. The module-creation process adds a **Directions** button following **References & Resources**.

Info & Insights . . .

You are now at the LessonBuilding "home plate." **Figure 18** is your on-screen checklist for preparing your lesson plan or module. As you work through each step, a check mark will appear in the appropriate circle. With a little practice, you will soon be creating lesson plans and modules with great efficiency.

What makes the checklist in Figure 18 especially unique is the time column. With it, you will be able to track the amount of time planned for each lesson component.

Based on the 3-hour rule for content goals, the default time for a lesson plan or module is 180 minutes. But in Figure 18, the time target is 60 minutes. Where did this come from? How does this relate to the 3-hour principle for content goals? Depending on course characteristics, course designers may alter the time target for each content goal. If this was the case for your current course, the new target time should be entered in the box shown in **Before You Progress...**

How to Change the Target Time in LessonBuilding

☐ 1. On the command line at the top of your screen, select **LessonBuilding | Settings**.
☐ 2. Click on the LessonBuilding tab.
☐ 3. Enter the target time you prefer.
☐ 4. Notice the options for changing the settings for printed lesson plans and modules. Explore these at your convenience.
☐ 5. Select **Close** when finished.

Note 1
Changing the default target time only affects the settings in LessonBuilding, not CourseBuilding. The number of content goals recommended in CourseBuilding is based on course credit characteristics and the Institutional Credit Policy (See Modules 5 and 6a or 6b, and Appendix B).

Note 2
As you develop a lesson, you will be budgeting both your in-class time and external time for student assignments. Together, these constitute the *full instructional time* for a content goal. However, the times shown in Figure 17 (Module 18) will show the total time budgeted for both sets of activities.

Before You Progress . . .

If an alteration to the 3-hour rule was made in Module 6a or 6b, enter the new instructional time target for each content goal here:

Course:________________

Target Time:________ **Hours**

For More Information . . .

BEST COPY AVAILABLE

Step by Step . . .

- ☐ 1. Make sure you are at the screen shown in **Figure 19**.
- ☐ 2. Read Info & Insights.
- ☐ 3. To select a listed content goal as a prerequisite, click the box to the right of the sort codes.
- ☐ 4. Use the **New Prerequisite** button to add any new content that should be reviewed before students progress. **Note**: This may be a previously-addressed content goal or subgoal; not new material.
- ☐ 5. Select **Next** to return to the lesson planning checklist.

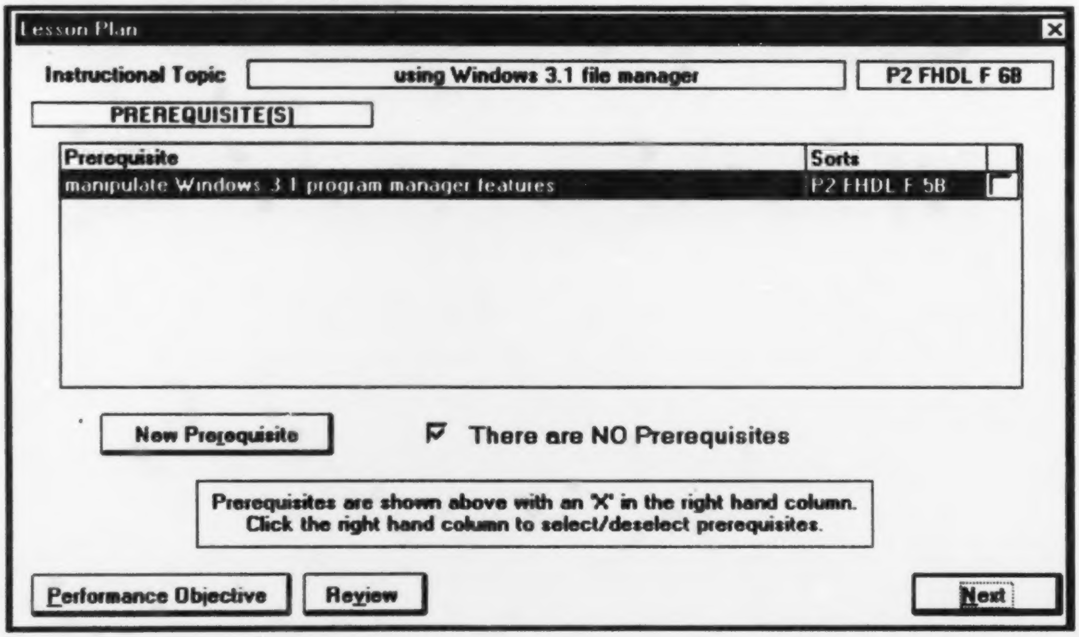
Notes:

1. To deselect a content goal as a prerequisite, click on the red **[x]** in the right column.

2. Use the **Review** button for a quick preview of the lesson plan/module.

3. Use the **Performance Objective** button to review that statement for the content goal which the lesson is based on, not for prerequisite content.

Figure 19. Selecting Prerequisite Content



Lesson Plan

Instructional Topic: using Windows 3.1 file manager P2 FHDL F 6B

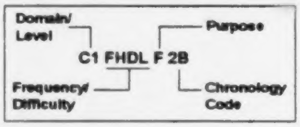
PREREQUISITE(S)

Prerequisite	Sorts	
manipulate Windows 3.1 program manager features	P2 FHDL F 5B	☐

☑ There are NO Prerequisites

Prerequisites are shown above with an 'X' in the right hand column. Click the right hand column to select/deselect prerequisites.

New Prerequisite
Performance Objective
Review
Next



Domain/ Level
Purpose
C1 FHDL F 2B
Frequency/ Difficulty
Chronology Code

Info & Insights . . .

One of the most important things any instructor does in the learning environment is to ask questions. Instructional questions have many purposes; they're routinely used to generate discussion, arouse curiosity, and to probe student knowledge and understanding of certain subject matter. The ability to use questions to teach is often a hallmark of an excellent instructor.

An especially important reason to ask questions is to determine if students have effectively gained prerequisite knowledge and skills before they progress into new learning. That is the purpose of this step in the lesson planning process. In this module, you will answer one basic question: *What prerequisite content should be addressed or reviewed before students begin the lesson or module now being developed?*

To help you answer this question, LessonBuilding will automatically cite for your consideration any prerequisite content goal as determined during the chronology sort (See Module 11). You can select such a content goal (as shown in **Figure 19**), or you can add any other review topics by using the **New Prerequisite** button. If you do this, state the desired topic in standard content goal format as much as possible.

Before You Progress . . .

. . . Make sure you have not added any new content as a prerequisite.

For More Information . . .

Determining Pre-test Needs

Step by Step . . .

☐ 1. From the lesson plan checklist screen (Figure 18), Select **Pre-Test(s)**. The screen in **Figure 20** will appear.

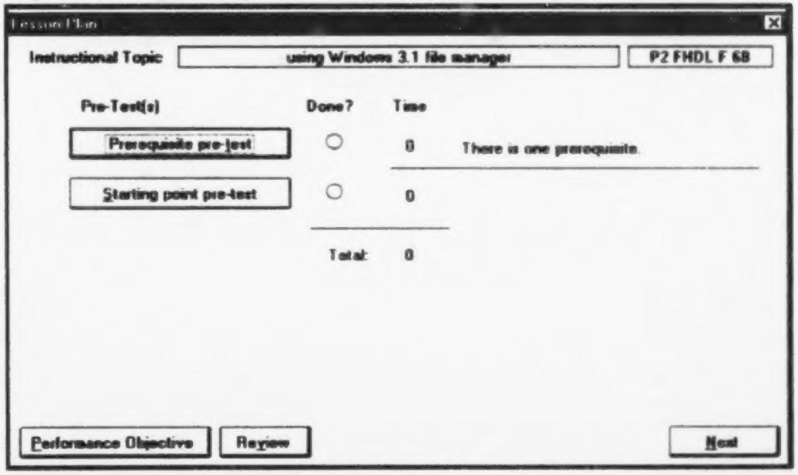
☐ 2. Read Info & Insights.

☐ 3. For each type of pre-test you decide to use:
  - ☐ Select the appropriate pre-test button.
  - ☐ From the templates shown in **Figure 21**, select the template that most accurately states the pre-test methodology.
  - ☐ In the screen that follows (not shown here), edit the template as needed in the text box. **Note:** Use the **Recreate from list** button as needed to select a different pre-test template.

☐ 3. (Continued)
  - ☐ Select **Next** when finished.
  - ☐ Near the bottom of the screen in **Figure 21**, enter the estimated number of minutes planned for administering the pre-test (not shown here).

☐ 4. Select **Next** to return to the Lesson planning checklist.

Figure 20. Selecting Pre-tests

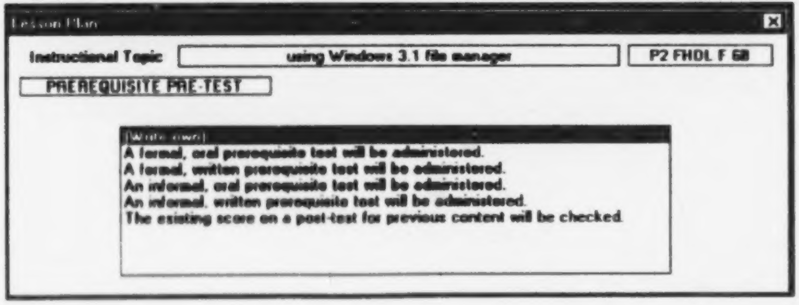


Lesson Plan

Instructional Topic: using Windows 3.1 file manager | P2 FHDL F 6B

Pre-Test(s) | Done? | Time
Prerequisite pre-test | ○ | 0 | There is one prerequisite.
Starting point pre-test | ○ | 0
Total: 0

Figure 21. Pre-test Template Options



Lesson Plan

Instructional Topic: using Windows 3.1 file manager | P2 FHDL F 6B

PREREQUISITE PRE-TEST

[Write own]
A formal, oral prerequisite test will be administered.
A formal, written prerequisite test will be administered.
An informal, oral prerequisite test will be administered.
An informal, written prerequisite test will be administered.
The existing score on a post-test for previous content will be checked.

Info & Insights . . .

Knowing what you know and knowing what you don't know is what knowing is all about.
Unknown

As you complete this module, your purpose is not to create pre-tests, but simply to identify if any are needed and to note how much time should be planned to administer them. When used, they are meant to be brief, typically taking only a few minutes to conduct.

LessonBuilding offers two fundamental reasons to use pre-tests. The most common reason is to determine what students may already know about a new lesson topic. This is called a *starting point pre-test*. It may be accomplished formally, informally, orally, in writing, or by reviewing previous evaluations.

The second reason is to help review important prerequisite content before advancing into new material. This is called a *prerequisite pre-test*. If you identified any prerequisites in Module 20, you will have the opportunity to cite a prerequisite pre-test here. The starting point pre-test is always an option.

Since you have more than one pre-test option, **Figure 20** shows a secondary checklist for making your determinations. A click on either pre-test button will lead to the screen partially shown in **Figure 21.** This is one of several coming screens which will allow you to simply select the most relevant option and then edit it as needed to suit both your instructional needs and your students' review needs.

Before You Progress . . .

For More Information . . .

✍ Step by Step . . .

☐ 1. From the lesson plan checklist screen (Figure 18), select **Interest Approach**. The screen in **Figure 22** will appear.

☐ 2. Read Info & Insights.

☐ 3. Enter your interest approach in the text box.

☐ 4. Enter the estimated number of minutes you plan to spend on this activity in the block provided below the text box.

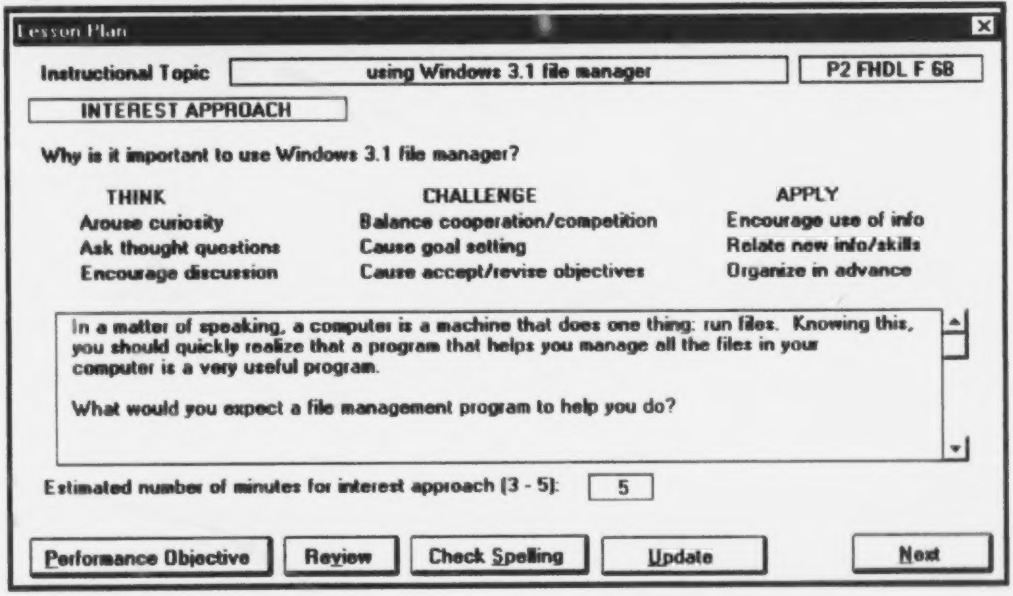
☐ 5. Use the **Check Spelling** button, especially if you are creating a module.

☐ 6. Select **Update** to save your entry.

☐ 7. Select **Next** to return to the lesson planning checklist.

Note: Use the **Review** button to inspect the entire lesson plan as desired.

Figure 22. Developing an Interest Approach



Instructional Topic: using Windows 3.1 file manager | P2 FHDL F 68

INTEREST APPROACH

Why is it important to use Windows 3.1 file manager?

THINK	CHALLENGE	APPLY
Arouse curiosity	Balance cooperation/competition	Encourage use of info
Ask thought questions	Cause goal setting	Relate new info/skills
Encourage discussion	Cause accept/revise objectives	Organize in advance

In a matter of speaking, a computer is a machine that does one thing: run files. Knowing this, you should quickly realize that a program that helps you manage all the files in your computer is a very useful program.

What would you expect a file management program to help you do?

Estimated number of minutes for interest approach (3 - 5): 5

Time Required: 5 - 10 minutes

Module 22

Info & Insights . . .

> ***A candle loses nothing by lighting another candle.***
> *Father James Keller, Founder, The Christophers*

You may not like the way the question is grammatically stated in **Figure 21**, but its importance can be crucial to the success of your lesson.

Why is important to [perform the content goal] ?

This section speaks to the relevance of the content goal to your students. In helping you to answer this vital question, this screen offers a variety of options in three categories:

THINK	Conduct activities that arouse student curiosity in the subject; ask thought-provoking questions; encourage open discussions about the subject.
CHALLENGE	Use methods that encourage individual/group cooperation and/or competition; motivate students to set certain goals; encourage students to accept or modify performance objectives.
APPLY	Motivate students to use new information; relate new knowledge and skills to previously-mastered knowledge and skills; prepare students to organize new information and skills as they develop.

Of course, there are many ways you may wish to develop interest approaches. As you do so, try to include a variety of techniques in your lesson plan. Then, use them frequently at key points in the lesson to help students stay focused and involved.

Before You Progress . . .

. . .If you collect personal interest or hobby information from your students at the beginning of a course, consider such information's usefulness in developing interest approaches for your lessons.

For More Information . . .

Step by Step . . .

☐ 1. From the lesson plan checklist screen (Figure 19), select **Learning Experiences**. The screen partially shown in **Figure 23** will appear.

☐ 2. Read Info & Insights.

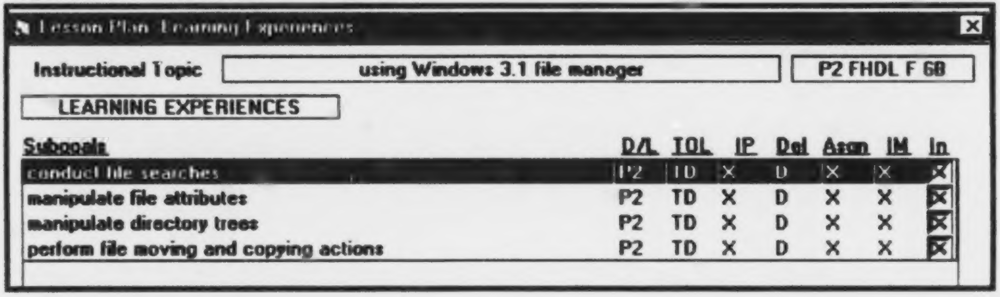
☐ 3. To develop as many subgoals as needed:
  - ☐ Click on the **New Subgoal** button. The screen shown in **Figure 24** will appear.
  - ☐ In the text box near the bottom of the screen, enter the subgoal.
  - ☐ Click on the **Add Another Subgoal** button at the bottom of the screen as needed.
  - ☐ Select **Next** when ready.

☐ 4. To sequence your subgoals once they are written:
  - ☐ From the screen partially shown in Figure 23, select **Sequence Subgoals**.
  - ☐ Use the screen provided to move subgoals as desired.
  - ☐ Select **Return** when finished.

☐ 5. Read **Before You Progress**. Repeat Step 3 as needed to fully develop the lesson.

☐ 6. Continue with Module 24 to finish developing learning experiences for each subgoal written.

Figure 23. Lesson Plan Subgoals

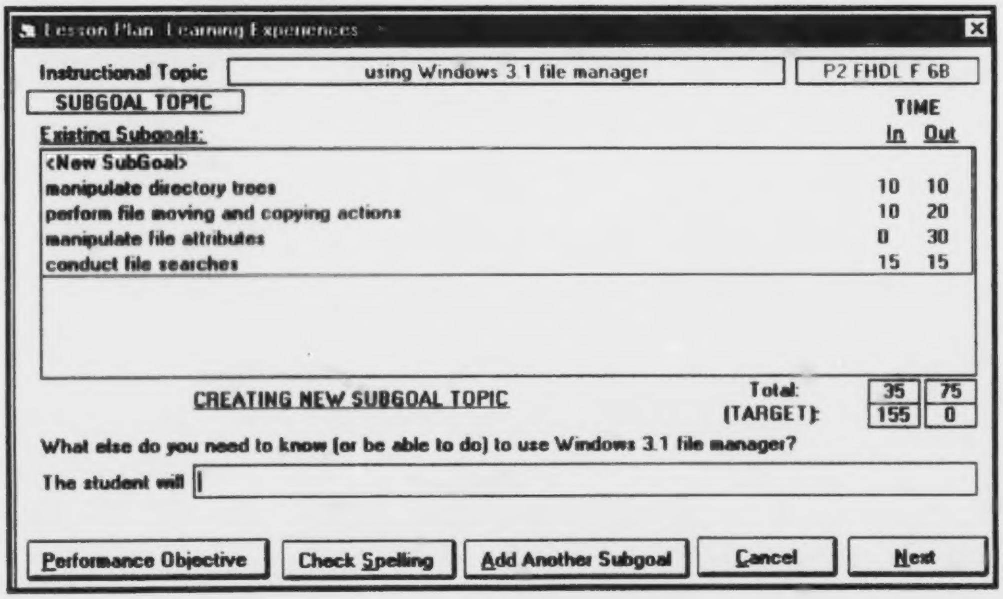


Instructional Topic: using Windows 3.1 file manager | P2 FHDL F 6B

LEARNING EXPERIENCES

Subgoals	D/L	TOL	IP	Del	Asgn	IM	In
conduct file searches	P2	TD	X	D	X	X	☒
manipulate file attributes	P2	TD	X	D	X	X	☒
manipulate directory trees	P2	TD	X	D	X	X	☒
perform file moving and copying actions	P2	TD	X	D	X	X	☒

Figure 24. Writing Subgoals



Instructional Topic: using Windows 3.1 file manager | P2 FHDL F 6B

SUBGOAL TOPIC

Existing Subgoals:	TIME In	TIME Out
<New SubGoal>		
manipulate directory trees	10	10
perform file moving and copying actions	10	20
manipulate file attributes	0	30
conduct file searches	15	15
Total:	35	75
(TARGET):	155	0

CREATING NEW SUBGOAL TOPIC

What else do you need to know (or be able to do) to use Windows 3.1 file manager?

The student will |

Time Required: 3 - 5 minutes per subgoal

Module 23

Info & Insights . . .

For both you and your students, content goals come go from plan to reality through the *learning experiences* included in each lesson and module. The key component in a learning experience is a *subgoal* which breaks down the content goal into more easily-learned segments. As with content goals, subgoals also begin with the phrase *The student will* and are (or should be) followed by an action verb.

Notice that the Instructional Topic (the content goal with the verb in gerund form) in **Figure 23** has four learning experiences; you may include as many subgoals as you deem appropriate to effectively break down the content goal.

As you can also see, subgoals go through a modified sorting process that results in fully-developed learning experiences. This is what a learning experience will look like when you print your lesson plan:

SUBGOAL TOPIC: perform file moving and copying actions
DOMAIN: Psychomotor **LEVEL**: Practice
THEORY OF LEARNING: Task Development
METHOD OF DELIVERY: Demonstration (time: 10 minutes)
INSTRUCTOR PRACTICES
1. I will provide a handout explaining the icons used within File Manager.
2. I will demonstrate how to expand directory trees.

ASSIGNMENTS (Time: 20 minutes)
1. The student will practice skill.

INSTRUCTIONAL MATERIALS
1. Computer
2. LCD Panel
3. Overhead projector (high intensity)

LessonBuilding will let you develop each individual subgoal and its full learning experience as a "package deal" if you wish; the other components are addressed in the following module. But in *this* module, Step by Step explains how to first write and sequence all subgoals *before* you finish developing their respective learning experiences. This is based on the personal belief that such an approach improves lesson continuity. The overriding issue, however, is that by working through the subgoals, the student is fully prepared to perform the action in the content goal according to the conditions and standards referenced in the appropriate performance objective.

Before You Progress . . .

. . . Use these content goal sorting codes to guide you in writing subgoals:
- ☐ Domain / Level
- ☐ Difficulty
- ☐ Purpose

Refer to Appendix D as needed.

. . . Write at least 2 or 3 subgoals for your lesson plan or module. You have enough subgoals when you can answer "yes" to this question:

By effectively performing all of these subgoals, will the student be fully prepared to perform the content goal being addressed?

For More Information . . .

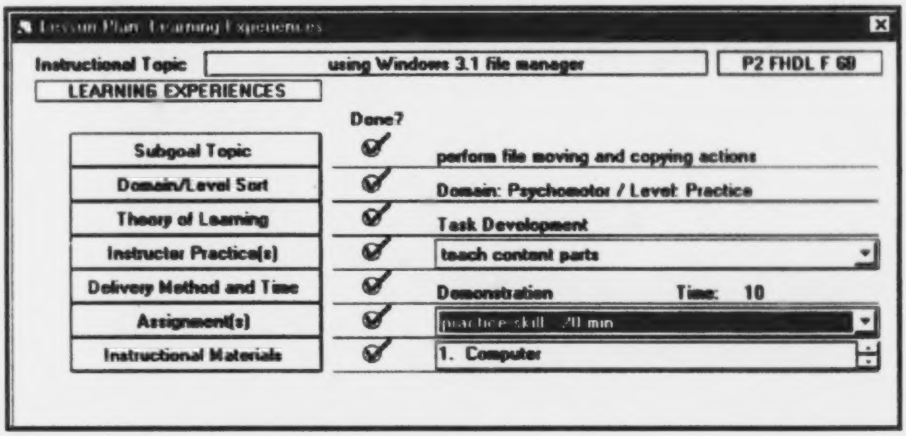
✍ Step by Step . . .

☐ 1. From the screen partially shown in Figure 23, select **Edit Subgoal**. The screen shown in **Figure 25** will appear.

☐ 2. Read Info & Insights.

☐ 3. Refer to **Table 6**, the section called Lesson / Module Planning, item 4, Develop Learning Experiences. Use this as the starting point to finish developing learning experiences for each subgoal written.

Figure 25. Learning Experiences Development Checklist



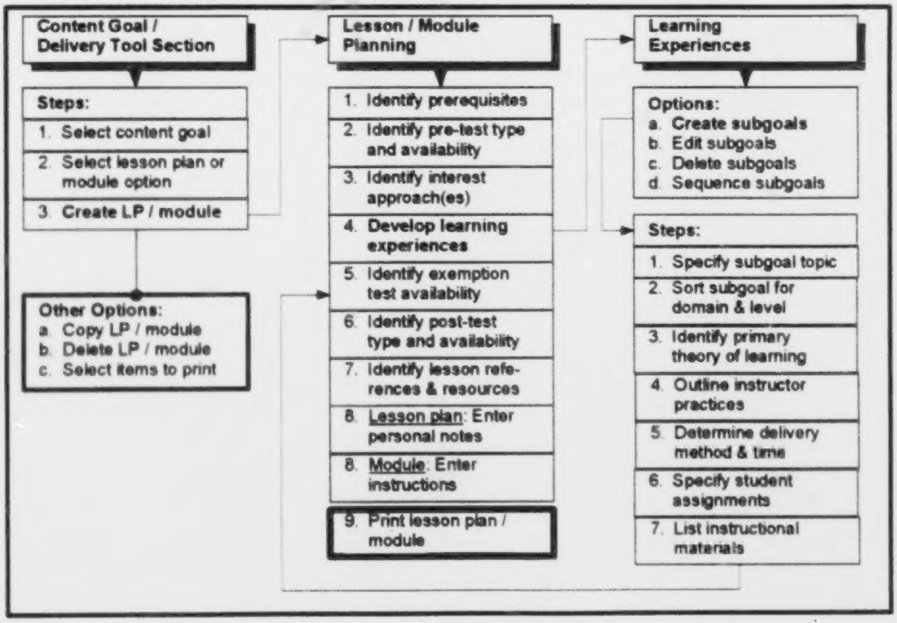
Lesson Plan: Learning Experiences

Instructional Topic: using Windows 3.1 file manager — P2 FHDL F 68

LEARNING EXPERIENCES

	Done?	
Subgoal Topic	✓	perform file moving and copying actions
Domain/Level Sort	✓	Domain: Psychomotor / Level: Practice
Theory of Learning	✓	Task Development
Instructer Practice(s)	✓	teach content parts
Delivery Method and Time	✓	Demonstration Time: 10
Assignment(s)	✓	practice skill - 20 min
Instructional Materials	✓	1. Computer

Table 6. Creating Learning Experiences



Content Goal / Delivery Tool Section

Steps:
1. Select content goal
2. Select lesson plan or module option
3. Create LP / module

Other Options:
a. Copy LP / module
b. Delete LP / module
c. Select items to print

Lesson / Module Planning

1. Identify prerequisites
2. Identify pre-test type and availability
3. Identify interest approach(es)
4. Develop learning experiences
5. Identify exemption test availability
6. Identify post-test type and availability
7. Identify lesson references & resources
8. Lesson plan: Enter personal notes
8. Module: Enter instructions
9. Print lesson plan / module

Learning Experiences

Options:
a. Create subgoals
b. Edit subgoals
c. Delete subgoals
d. Sequence subgoals

Steps:
1. Specify subgoal topic
2. Sort subgoal for domain & level
3. Identify primary theory of learning
4. Outline instructor practices
5. Determine delivery method & time
6. Specify student assignments
7. List instructional materials

Info & Insights . . .

How do you define *creative*? In the current context, let's define it as *the art of combining two or more commonly-known things in order to create something new and different*. Now look at **Figure 25** and **Table 6**. Far from creative, they look rather "mechanical." Indeed, there will be several screens you'll quickly -- and somewhat mechanically -- complete in this module. Use Table 6 to navigate your way through.

Checklists and diagrams aside, your creative opportunities may expand considerably as you develop each learning experience. Why? As you complete the steps in Table 6, LessonBuilding will query you and offer dozens of techniques that you may select and adapt as needed to answer the question at hand.

Notice the *theory of learning* button in Figure 25. If a subgoal is the foundation on which each learning experience is built, then the selected learning theory is the supporting framework for the rest of the structure. LessonBuilding incorporates five different learning theories to build around.

Association. This easy, commonly-used theory helps students relate new information to already known information. This is done through the instructional use of similarities, differences, and contiguity.

Task Development. This theory holds that learning and skills development can be broken into smaller parts for easier student mastery. Properly combined, the parts come together to make the whole. (This book's design is based largely on the task development theory.)

Goal Seeking. This is a good theory to use with affective (and other) content. Use it to help motivate your students towards attainment of any realistic goal.

Stimulus-Response-Reinforcement. This "behavioristic" theory can be potentially difficult and risky theory to use. It works because: 1. stimuli cause responses; 2. positive reinforcement causes responses to be repeated; 3. negative reinforcements help to reduce inappropriate responses; and; 4. duplicated reinforcements become stimuli.

Problem Solving. This theory incorporates characteristics from all of these previously-mentioned theories. It involves answering five fundamental questions: 1. Where are we now? 2. Where are we going? 3. Why are we going? 4. How are we going to get there? 5. How will we know when we are there?

Once you specify the learning theory and select the **Instructional Practices** button, LessonBuilding will offer a variety of practices matched to the learning theory you chose. Select your preferred practices and edit them as desired. **Please note:** You are not limited to the techniques tied to each theory; select techniques from as many theories as you wish, using the primary theory to guide you.

Now, go get creative.

Before You Progress . . .

. . . Finish developing learning experiences for all subgoals.

For More Information . . .

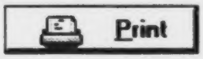
. . .The IPSI book offers more fully-developed information about using learning theories to develop instructional materials. To access it, press **F2** and follow these links:

- ☐ Part II, Delivering
- ☐ Chapter 4, Operationalizing Learning Theories

Read the sections appropriate to your needs.

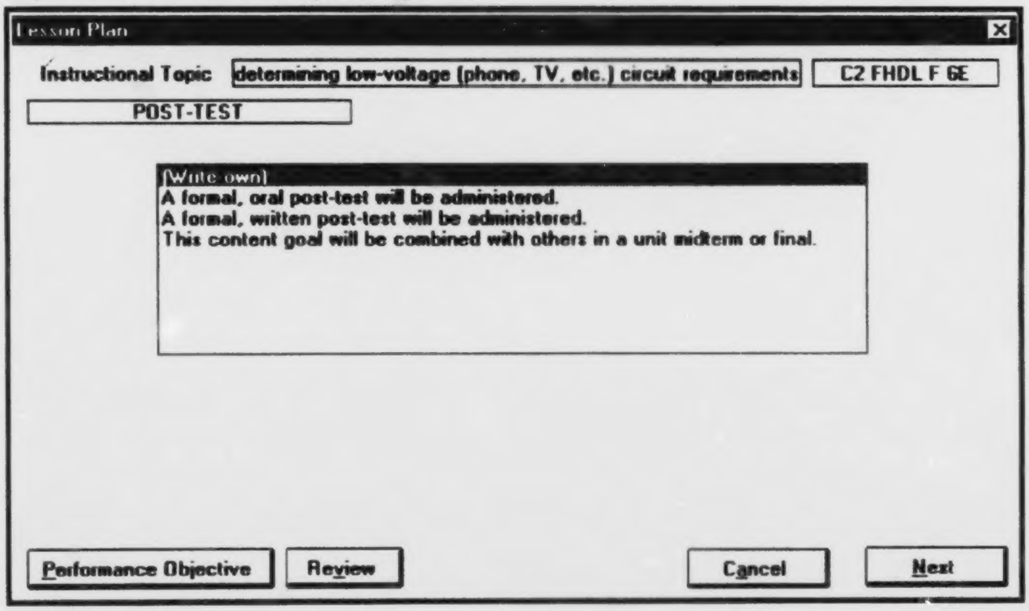
Step by Step . . .

- ☐ 1. Read Info & Insights.
- ☐ 2. From the screen shown in Figure 18, select **Exemption Test**. Answer *yes* or *no* to the question in the text box.
- ☐ 3. Select **Post-Test**. A screen partially shown in **Figure 26** will appear.
  - ☐ Select the preferred post-test option.
  - ☐ Edit the selected template as needed.
  - ☐ Select **Next** when ready.
- ☐ 4. Select **References & Resources**.
  - ☐ Edit the information included according to the specific subject matter being addressed.
  - ☐ Select **Next** when ready.
- ☐ 5. If you are developing a module, select **Directions**.
  - ☐ Enter any general directions for student use in completing the module.
  - ☐ Select **Next** when ready.
- ☐ 6. Select **Notes**.
  - ☐ Enter any remaining notes pertaining to the lesson plan or module.
  - ☐ Select **Next** when ready.
  - ☐ From the screen shown in Figure 18, select **Close**.
- ☐ 7. From the screen shown in Figure 17, select **Print**.



- ☐ 8. Refer to **Appendix F** as needed to manipulate and print reports.

Figure 26. Post-test Template Options



Instructional Topic: determining low-voltage (phone, TV, etc.) circuit requirements

C2 FHDL F 6E

POST-TEST

[Write own]
A formal, oral post-test will be administered.
A formal, written post-test will be administered.
This content goal will be combined with others in a unit midterm or final.

Info & Insights . . .

> ***Look at a day when you were supremely satisfied at its end. It's not a day when you lounge around doing nothing. It's when you've had everything to do and you've done it.***
>
> *Margaret Thatcher*

Take a moment. Smile. Relax. You are about to put the finishing touches on your lesson plan. **Step by Step** will guide you through the last few actions; below are a few pointers to refer to as you finish.

Exemption tests. These allow you to evaluate students before instruction occurs to determine if they already know the subject matter sufficiently. Ideally, these should be written tests to insure that each student is adequately assessed. In LessonBuilding, you only identify if an exemption test is available, not what it consists of.

Post-Tests. A post-test is an excellent tool to help consolidate student learning and understanding. After instruction and other learning activities, use a post-test to verify that student learning was adequate and as a way to identify and clear up any misconceptions. **Figure 26** shows the template options for post-tests.

The **Review** button. As you're finishing up your lesson plan or module, use this button (included at the bottom of many LessonBuilding screens) for a preview of how the final product will look when printed. Especially for modules, use this button to insure that all information is grammatically correct, complete, and logical.

References & Resources. When you select this button, any information entered in the syllabus under *Text and Reference* will be displayed. Edit this information as needed for the current lesson plan or module.

Directions. This button applies only to modules. Use the space provided to give students any remaining directions they may need.

Notes. Enter any closing notes for yourself and for other instructors who may use the lesson plan.

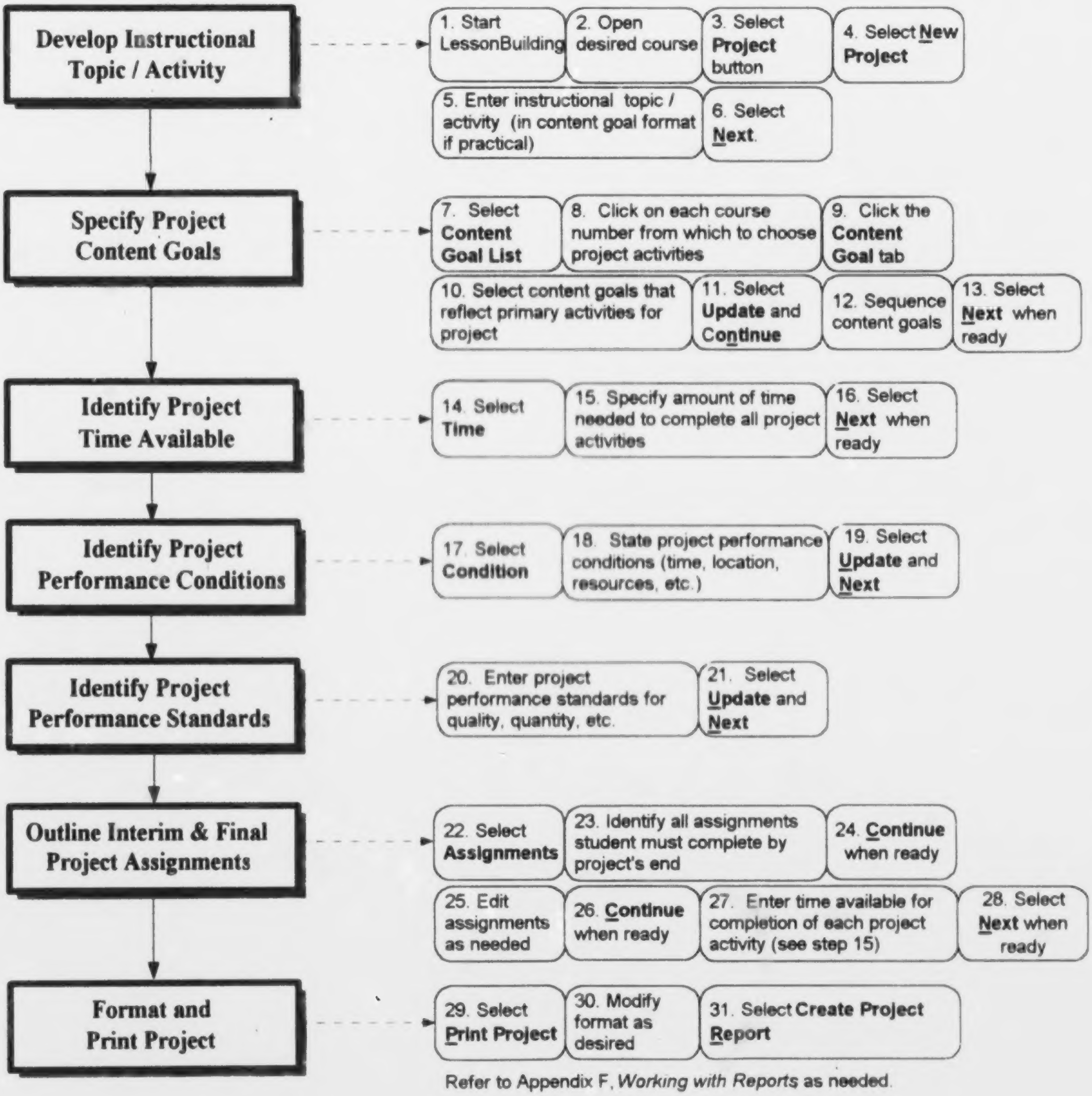
Before You Progress . . .

For More Information . . .

✍ Step by Step . . .

☐ 1. Read Info & Insights to determine if you wish to develop a project.

Table 7. Project Development



Develop Instructional Topic / Activity

1. Start LessonBuilding
2. Open desired course
3. Select **Project** button
4. Select **New Project**
5. Enter instructional topic / activity (in content goal format if practical)
6. Select **Next**.

Specify Project Content Goals

7. Select **Content Goal List**
8. Click on each course number from which to choose project activities
9. Click the **Content Goal** tab
10. Select content goals that reflect primary activities for project
11. Select **Update** and **Continue**
12. Sequence content goals
13. Select **Next** when ready

Identify Project Time Available

14. Select **Time**
15. Specify amount of time needed to complete all project activities
16. Select **Next** when ready

Identify Project Performance Conditions

17. Select **Condition**
18. State project performance conditions (time, location, resources, etc.)
19. Select **Update** and **Next**

Identify Project Performance Standards

20. Enter project performance standards for quality, quantity, etc.
21. Select **Update** and **Next**

Outline Interim & Final Project Assignments

22. Select **Assignments**
23. Identify all assignments student must complete by project's end
24. **Continue** when ready
25. Edit assignments as needed
26. **Continue** when ready
27. Enter time available for completion of each project activity (see step 15)
28. Select **Next** when ready

Format and Print Project

29. Select **Print Project**
30. Modify format as desired
31. Select **Create Project Report**

Refer to Appendix F, *Working with Reports* as needed.

Time Required: 20 - 45 minutes Module 26

Info & Insights . . .

Why may you wish to create a project? Projects let you:

- Combine a related set of content goals from one or more courses in order to consolidate a related set of learning / performance activities;
- Create individualized projects for occupational program students based on work locations and individual performance requirements;
- Create individualized projects for students performing a related set of laboratory or other special activities.

You don't have to have developed any lesson plans or modules before you develop a project, but it is best if you do. As a minimum, you should develop LPs or modules for the content goals to be included in the project. Not only will this help clarify the project in your own mind, but it will help you determine in advance how much time to allot for project activities.

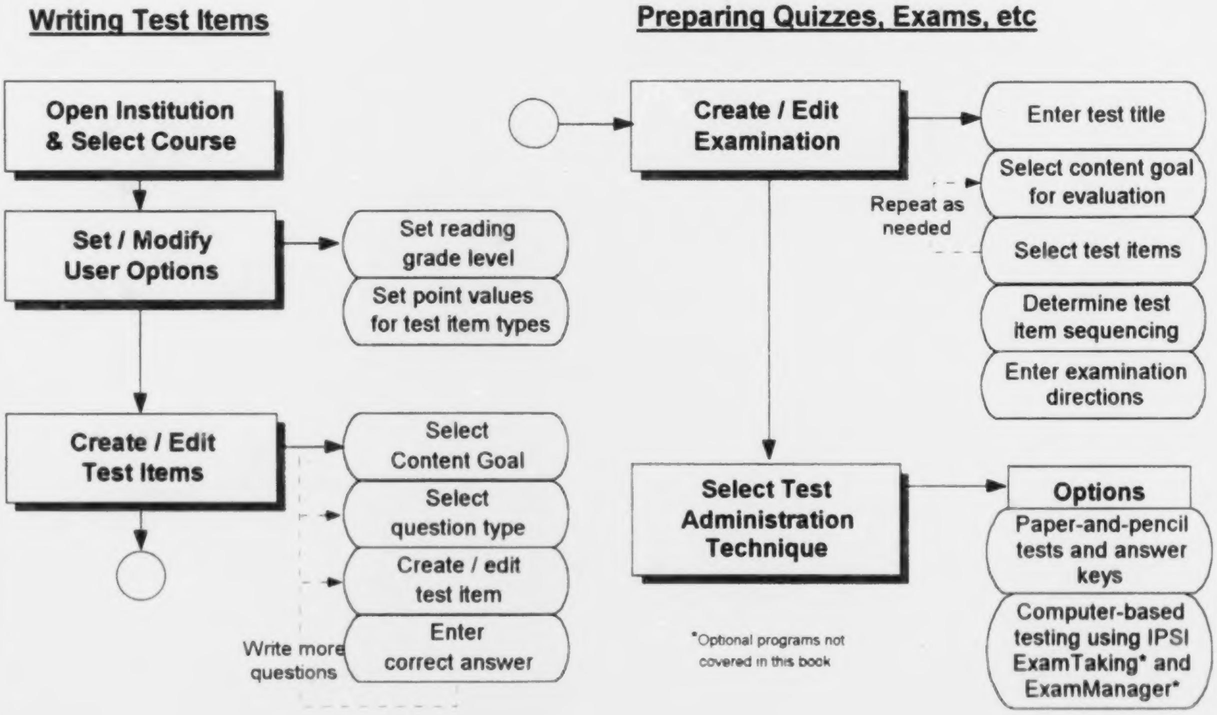
A special note for developing cooperative / occupational education projects: If a third person, such as a job site supervisor will evaluate student performance for the project, cite this in the project condition. Then, when you create the final project report, add a 1 - 5 rating scale beside each content goal included in the project for the supervisor's use. Make sure the supervisor has a copy of the project when it begins.

Use **Table 7** to guide you in developing a project.

Before You Progress . . .

For More Information . . .

Table 8. The ExamBuilding Process


Writing Test Items
Open Institution & Select Course
Set / Modify User Options
Set reading grade level
Set point values for test item types
Create / Edit Test Items
Select Content Goal
Select question type
Create / edit test item
Enter correct answer
Write more questions
Preparing Quizzes, Exams, etc
Create / Edit Examination
Enter test title
Select content goal for evaluation
Repeat as needed
Select test items
Determine test item sequencing
Enter examination directions
Select Test Administration Technique
Options
Paper-and-pencil tests and answer keys
Computer-based testing using IPSI ExamTaking* and ExamManager*

*Optional programs not covered in this book

Time Required: 5 - 10 minutes

Module 27

Info & Insights . . .

Perhaps you have been developing and administering your own tests for some time. Maybe you even use a scannable answer sheet and use only objective test items such as multiple choice, and true/false items.

You may also be one of many educators who already use some other software package to prepare and administer test items. And if you are on the leading edge of testing and evaluation, you may possibly use some item analysis techniques to determine the overall goodness of your test items.

Why would you wish to use ExamBuilding? What advantages could it possibly offer?

There are several reasons, as you will see in the coming modules. But the most fundamental reason is this: ExamBuilding takes a *proactive* approach to help you write top-quality test items. It helps you:

- correct errors in test item construction as you write;
- write test items designed for the reading grade level of your students;
- write test items at an appropriate level of learning, based on content goal sorting codes.
- write test items and performance checklists that address all three domains of learning.
- quickly prepare performance and affective checklists for immediate use.

As a result of these and more attributes, ExamBuilding will help you create examinations which are much higher in validity and reliability than many other examinations.

This is not to say that thee isn't a catch – actually there are two. First, ExamBuilding will require a long-term relationship from you regarding test item entry. You cannot casually "jot down" test items with ExamBuilding. You must know the subject matter and be able to respond intelligently to the questions the program will raise. It may take some time before you're ready to create comprehensive examinations.

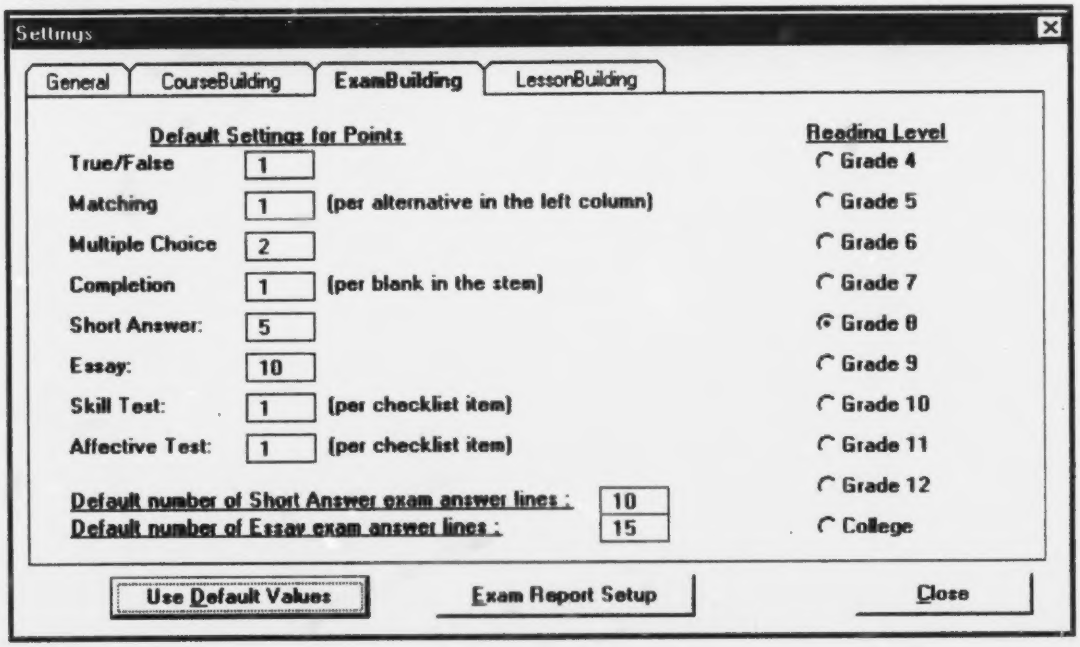
That leads to the second catch: you need patience if you are to use ExamBuilding to its fullest potential (which is *strongly recommended!*). There may be times when you feel as if you are being scolded for making some minor error in test item construction. Of course, you may disregard the program's questions. But at best, you reduce the program to being little more than a word processor. At worst, you may compromise both the test item and each examination in which it is used.

Before You Progress . . .

. . . Plan to spend one to two hours to cover modules 28-37 and write a variety of test items.

For More Information . . .

Figure 27. Making Settings in ExamBuilding


Settings
General
CourseBuilding
ExamBuilding
LessonBuilding
Use Default Values
Exam Report Setup
Close

Default Settings for Points

True/False: 1

Matching: 1 (per alternative in the left column)

Multiple Choice: 2

Completion: 1 (per blank in the stem)

Short Answer: 5

Essay: 10

Skill Test: 1 (per checklist item)

Affective Test: 1 (per checklist item)

Default number of Short Answer exam answer lines: 10

Default number of Essay exam answer lines: 15

Reading Level

- ○ Grade 4
- ○ Grade 5
- ○ Grade 6
- ○ Grade 7
- ● Grade 8
- ○ Grade 9
- ○ Grade 10
- ○ Grade 11
- ○ Grade 12
- ○ College

Time Required: 5 - 10 minutes

Module 28

Info & Insights . . .

A very important principle in performance instruction is to evaluate student performance as specified in the content goal. In practice, this means that before writing a test item, you must first select the content goal that each item pertains to. The result of this principle, properly applied, is that you circumvent hidden instructional agendas that are not a part of the formal curriculum. For example, unless you are teaching a reading comprehension course, it would be inappropriate to write test items designed primarily to test a student's reading capabilities.

This leads to the first test item writing error that is easily made: writing items that are above students' average reading grade level. In doing so, you risk punishing students who lack the necessary reading skills, even though they may be otherwise able to answer the question.

To help you avoid this error, you may adjust ExamBuilding settings to notify you when there are mismatches between a test item and the expected reading level of your students. Here is how to do that:

How to Set the Reading Level

- ☐ 1. From the command line at the top of your screen, select **ExamBuilding | Settings**.
- ☐ 2. Click on the ExamBuilding tab. The screen shown in **Figure 28** will appear.
- ☐ 3. Decide what reading level is most appropriate for your students. *Then subtract 1 or 2 from this number* based on the typical skill range of your students. On the right side of the screen, select this number (reading grade level minus 1 or 2).
- ☐ 4. Notice the options for setting the number of points each test item is worth. Adjust these as you wish at your convenience.
- ☐ 5. Select **Close** when finished.

Note Notice that the default reading level is set at **8**. Writing to this (or even higher) levels may be difficult. However, by editing test items to reach this target, you will bring great clarity to your tests and improve student performance without having to "grade on a curve."

Errors associated with reading level mismatches are very common, but there are many other mistakes a test item writer can make. For a summary of such errors (and ways ExamBuilding will help you avoid them), take a few minutes to read **Appendix J**, *(Mis)Adventures in Test Item Writing*.

Before You Progress . . .

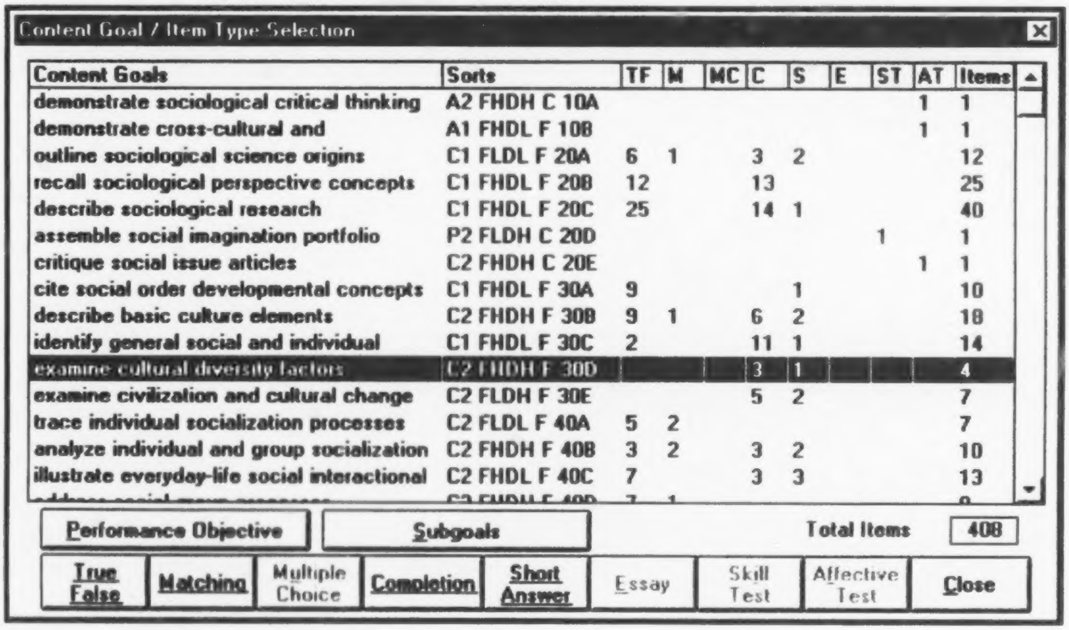
For More Information . . .

. . . About how ExamBuilding determines the reading level for each test item, press **F2** and follow these links:

- ☐ Part III, Evaluating
- ☐ Chapter 8: Testing Performance
- ☐ Improving Test Items
- ☐ Use ≥> to advance to Avoid **Skill Level Mismatches**.
- ☐ Read information on SMOG, CLOZE and RIX as desired.

Time needed: 10-20 minutes

Figure 28. Selecting Content Goals for Test Items



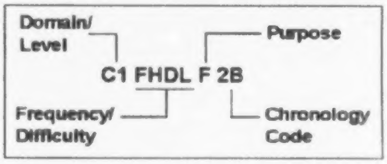
Content Goal / Item Type Selection
Performance Objective
Subgoals
True False
Matching
Multiple Choice
Completion
Short Answer
Essay
Skill Test
Affective Test
Close

Content Goals	Sorts	TF	M	MC	C	S	E	ST	AT	Items
demonstrate sociological critical thinking	A2 FHDH C 10A								1	1
demonstrate cross-cultural and	A1 FHDL F 10B								1	1
outline sociological science origins	C1 FLDL F 20A	6	1		3	2				12
recall sociological perspective concepts	C1 FHDL F 20B	12			13					25
describe sociological research	C1 FHDL F 20C	25			14	1				40
assemble social imagination portfolio	P2 FLDH C 20D							1		1
critique social issue articles	C2 FHDH C 20E								1	1
cite social order developmental concepts	C1 FHDL F 30A	9				1				10
describe basic culture elements	C2 FHDH F 30B	9	1		6	2				18
identify general social and individual	C1 FHDL F 30C	2			11	1				14
examine cultural diversity factors	C2 FHDH F 30D				3	1				4
examine civilization and cultural change	C2 FLDH F 30E				5	2				7
trace individual socialization processes	C2 FLDL F 40A	5	2							7
analyze individual and group socialization	C2 FHDH F 40B	3	2		3	2				10
illustrate everyday-life social interactional	C2 FHDL F 40C	7			3	3				13

Total Items 408

Two options to use if you can't fully see content goals:

- Double-click on an individual content goal.
- Adjust column widths by placing the cursor between the grey header bars. Click and drag to adjust as desired.



Domain/
Level
Purpose
C1 FHDL F 2B
Frequency/
Difficulty
Chronology
Code

See Appendix D for more details.

Time Required: 10 - 15 minutes Module 29

Info & Insights . . .

Figure 28 is your home screen for writing test items. As stated in Module 28, each test item you write is linked to a specific content goal, not just to some chapter in a textbook or some other general reference. Later, when you create exams, you'll do so by first identifying the content goal(s) from which to draw test items.

The eight different types of test items you may write are detailed across the bottom of the screen. These item types are categorized as follows:

Objective items:	True-False	Matching	Multiple Choice
Subjective items:	Completion	Short answer	Essay
Performance items:	Skill test	Affective test	

How do you decide what type(s) of items to write? ExamBuilding will make a variety of recommendations by showing certain item type buttons in black, underlined text. Its recommendations are based on the domain and level sort codes for the content goal. Take a few minutes to click on different content goals; compare their domain/level sorts with the item types ExamBuilding recommends. You may choose to disregard these recommendations, but by following them you:

- save time and trouble writing complex test items (such as multiple-choice items) when a simpler type of item will do; and
- reduce the risk of making any number of test-item writing errors (as outlined in Appendix J).

As you write test items, it is up to you to keep track of the content goal each item is linked to. ExamBuilding can help you rate the overall goodness of each test item, but it cannot logically determine if you are addressing the correct content goal.

If you should mismatch a test item to a content goal, there are two ways to correct the problem:

- Copy test items from one content goal to another (or to another course) by using the **ExamBuilding | Copy Items** command.
- Go to the content goal that the test item properly addresses. Select the button for the type of test item to be imported. Then use **Import Item** to locate and transfer the test item.

Before You Progress . . .

. . . Note that in modules 30 - 37, each type of test item will be addressed individually. Move freely between these modules based on the types of items you're writing.

For More Information . . .

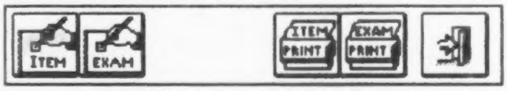
Module	Test Item Type
30	True-false
31	Matching
32	Multiple choice
33	Completion
34	Short answer
35	Essay
36	Skill test
37	Affective test

▪ ExamBuilding 4.0

Writing True-False Test Items

## ✍ Step by Step . . .

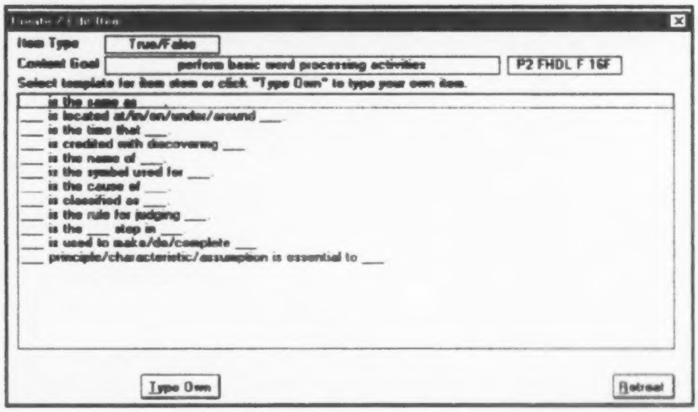
- ☐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.
- ☐ 2. Select the **Item** (far left) button.



The screen shown in Figure 28 (Module 29) will appear.

- ☐ 3. Click once on the content goal to which the test item will be linked.
- ☐ 4. Select the **True | False** button at the bottom of the screen.
- ☐ 5. Select **New Item.** The screen shown in **Figure 29** will appear.
- ☐ 6. Single-click the template that most closely relates to the test item you're writing or use the **Type Own** button. The program will advance to the screen in **Figure 30**.
- ☐ 7. Write/edit the item as desired.
- ☐ 8. Indicate the correct answer to the question.
- ☐ 9. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.
- ☐ 10. **Optional**: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 29. Templates for True-False Test Items



Item Type: True/False

Content Goal: perform basic word processing activities — P2 FHDL F 16F

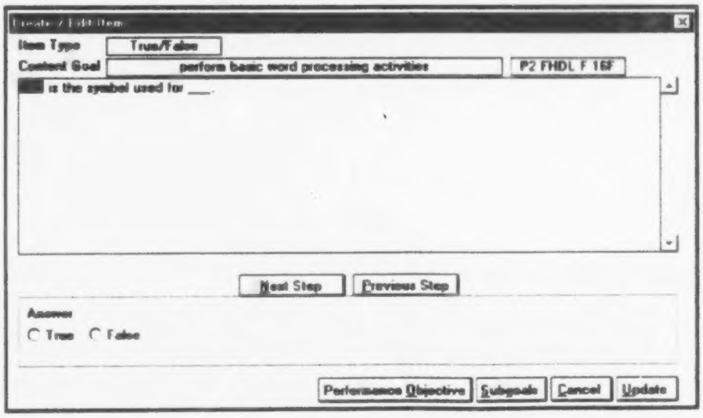
Select template for item stem or click "Type Own" to type your own item.

___ is the same as ___.
___ is located at/in/on/under/around ___.
___ is the time that ___.
___ is credited with discovering ___.
___ is the name of ___.
___ is the symbol used for ___.
___ is the cause of ___.
___ is classified as ___.
___ is the rule for judging ___.
___ is the ___ step in ___.
___ is used to make/do/complete ___.
___ principle/characteristic/assumption is essential to ___.

↔ **Hint . . .**

True-false items are appropriate for low-level (Cognitive-fact or Psychomotor-imitation) test items and for simple concepts related to higher-level learning or skills. If one of these templates isn't appropriate to your current needs, use them as examples for how complex a typical true-false item should be.

Figure 30. True-False Item Writing & Editing Screen



Create / Edit Item

Item Type: True/False

Content Goal: perform basic word processing activities — P2 FHDL F 16F

___ is the symbol used for ___.

Answer: ○ True ○ False

↔ **Hint . . .**

Don't overlook the opportunity to review the performance objective or subgoals for the content goal as needed to help keep test items on target. Use the buttons at the bottom of the screen.

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Info & Insights . . .

General advantages of true-false test items

1. Test items can cover a large amount of content in little time.
2. Subjective scoring is eliminated.
3. True-false items provide realistic tasks for many students since they must often judge the truth of statements in real life.

General limitations

1. Guessing is encouraged.
2. Instructors often use true-false items to test unimportant or highly specific information.
3. True-false items are fairly limited to recall of information.
4. Good, unambiguous items can be difficult to write.

Before You Progress . . .

. . . Make sure that each true-false test item you write:

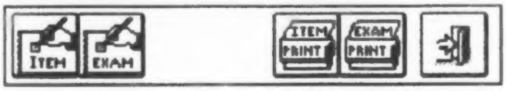
☐ Tests a cognitive product.
☐ Tests only one idea.
☐ Is free of hedgers and absoluters.
☐ Is stated in the positive.
☐ Is totally true or false.

For More Information . . .

Module	Test Item Type
30	**True-false**
31	Matching
32	Multiple choice
33	Completion
34	Short answer
35	Essay
36	Skill test
37	Affective test

✍ Step by Step . . .

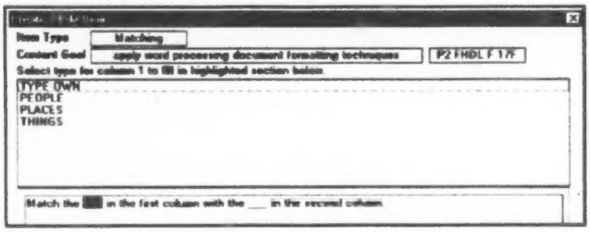
- ☐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.
- ☐ 2. Select the **Item** (far left) button.


ITEM
EXAM
ITEM PRINT
EXAM PRINT

The screen shown in Figure 28 (Module 29) will appear.

- ☐ 3. Click once on the content goal to which the test item will be linked. **Note:** Make sure that short-answer questions are appropriate to the content goal level of learning (the short answer button will be *black* and *underlined*).
- ☐ 4. Select the **Matching** button at the bottom of the screen.
- ☐ 5. Select the **New Item** button at the bottom of the screen.
- ☐ 6. To select the template provided, single-click it. Otherwise, select the **Type Own** button to enter instructions for the item. The program will advance to the screen in **Figure 31**.
- ☐ 7. Read the special guidance provided in Info & Insights.
- ☐ 8. Write/edit the item as desired.
- ☐ 9. Indicate the correct answers for each item in the left column.
- ☐ 10. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.
- ☐ 11. Optional: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 31. Left-column Options



Item Type: Matching

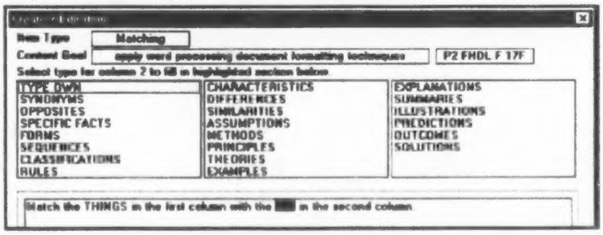
Content Goal: apply word processing document formatting techniques — P2 FHDL F 17F

Select type for column 1 to fill in highlighted section below.

TYPE OWN
PEOPLE
PLACES
THINGS

Match the ▆ in the first column with the ___ in the second column.

Figure 32. Right-column Options



Item Type: Matching

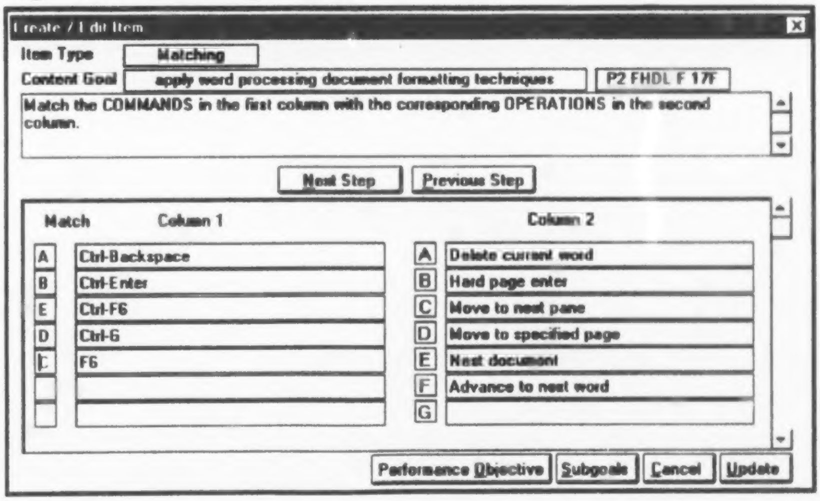
Content Goal: apply word processing document formatting techniques — P2 FHDL F 17F

Select type for column 2 to fill in highlighted section below.

TYPE OWN
SYNONYMS
OPPOSITES
SPECIFIC FACTS
FORMS
SEQUENCES
CLASSIFICATIONS
RULES
CHARACTERISTICS
DIFFERENCES
SIMILARITIES
ASSUMPTIONS
METHODS
PRINCIPLES
THEORIES
EXAMPLES
EXPLANATIONS
SUMMARIES
ILLUSTRATIONS
PREDICTIONS
OUTCOMES
SOLUTIONS

Match the THINGS in the first column with the ▆ in the second column.

Figure 33. Matching Test Item


Create / Edit Item
Next Step
Previous Step
Performance Objective
Subgoals
Cancel
Update

Item Type: Matching

Content Goal: apply word processing document formatting techniques — P2 FHDL F 17F

Match the COMMANDS in the first column with the corresponding OPERATIONS in the second column.

Match	Column 1		Column 2
A	Ctrl-Backspace	A	Delete current word
B	Ctrl-Enter	B	Hard page enter
E	Ctrl-F6	C	Move to next pane
D	Ctrl-G	D	Move to specified page
C	F6	E	Next document
		F	Advance to next word
		G	

Time Required: 3 - 10 minutes per item

Module 31

Info & Insights . . .

General advantages of matching test items

1. Much factual information can be covered in a relatively short time.
2. Subjective scoring is eliminated.
3. This type is useful in accessing students ability to match words with definitions, events with devices, concepts with words or symbols, etc.

General limitations

1. A good set to of matching items may be difficult to write.

Special guidance

- The templates for matching items are designed to insure that you apply an appropriate label to each list. This is an important principle; it helps you avoid the error of entering different classifications of things in any given column. Notice in **Figure 32** that each label is printed in upper-case letters. Apply this principle in any modifications you make.

- Answers for matching items are tied to the stem (left) column, so it helps to create this column first. To help reduce guessing, this column should have at least 5 items, and the left column should have at least one additional item.

- Each list will be sequenced alphabetically when the item is finished and closed. ExamBuilding will automatically adjust the answers to accommodate resequencing as needed.

Before You Progress . . .

. . . Make sure that each matching test item you write:

☐ Tests a cognitive product.
☐ Has more options in the alternatives (right) column than in the stem column.
☐ Has at least 5 items in the stem column.
☐ Include lists of related items.
☐ Provides clear directions.

For More Information . . .

Module	Test Item Type
30	True-false
31	**Matching**
32	Multiple choice
33	Completion
34	Short answer
35	Essay
36	Skill test
37	Affective test

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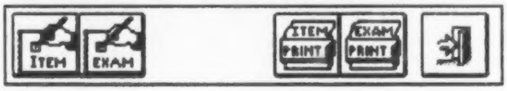
✍ Step by Step . . .

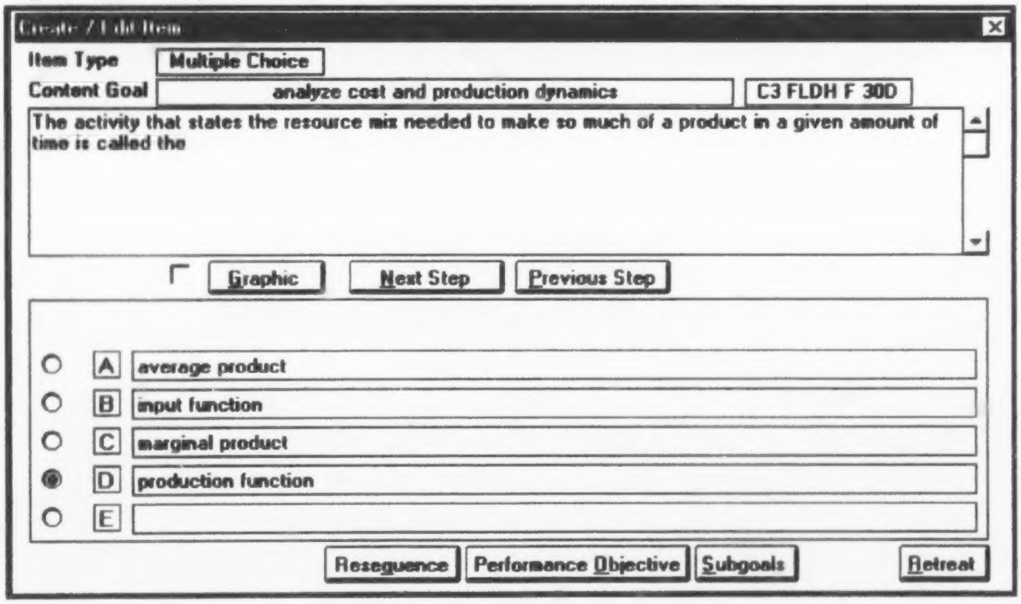
- ❐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.
- ❐ 2. Select the **Item** (far left) button.



The screen shown in Figure 28 (Module 29) will appear.

- ❐ 3. Click once on the content goal to which the test item will be linked. **Note:** Make sure that multiple choice items are appropriate to the content goal level of learning (the multiple choice button will be *black* and *underlined*).
- ❐ 4. Select the **Multiple Choice** button at the bottom of the screen.
- ❐ 5. Select the **New Item** button at the bottom of the screen.
- ❐ 6.Single-click the template that best fits your needs, or select **Type Own**. The program will advance to the screen in **Figure 34**.
- ❐ 7. Write/edit the item as desired.
- ❐ 8. Identify the correct answer.
- ❐ 9. Use **Resequence** as needed to rearrange each alternative. **Note:** In doing this, refer to the guidelines in **Info & Insights**.
- ❐ 10. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.
- ❐ 11. Optional: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 34. Sample Multiple Choice Test Item



Item Type: Multiple Choice

Content Goal: analyze cost and production dynamics | C3 FLDH F 30D

The activity that states the resource mix needed to make so much of a product in a given amount of time is called the

○ A average product
○ B input function
○ C marginal product
● D production function
○ E

75

Time Required: 3 - 10 minutes per item

Module 32

Info & Insights . . .

General advantages of multiple choice test items

1. Subjective scoring is eliminated.
2. Guessing is reduced.

General limitations

1. Good items are hard to write.
2. Good distractors (incorrect options) can be hard to find.
3. Requires a longer student response time than true-false.

Other guidelines

ExamBuilding will generally sequence alternatives alphabetically. Other options you might prefer include:

- Shortest to longest
- Longest to shortest
- Based on continuity of items within each alternative.

Whatever technique you prefer, strive for consistency in using it as you write multiple choice items.

Before You Progress . . .

. . . Make sure that each multiple choice item you write:

☐ Tests a cognitive product.
☐ Provides all the information the student needs in the stem.
☐ Uses alternatives that agree grammatically with the stem.
☐ Uses alternatives that are about the same length.
☐ Emphasizes key words and negatives (with boldface or underlining).
☐ Has only one most correct answer.
☐ Uses credible distractors.
☐ Is free of synonyms in the stem and alternatives.

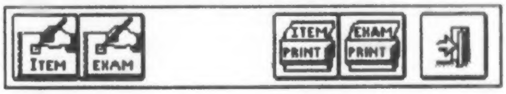
For More Information . . .

Module	Test Item Type
30	True-false
31	Matching
32	**Multiple choice**
33	Completion
34	Short answer
35	Essay
36	Skill test
37	Affective test

✍ Step by Step . . .

☐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.

☐ 2. Select the **Item** (far left) button.


ITEM
EXAM
ITEM PRINT
EXAM PRINT

The screen shown in Figure 28 (Module 29) will appear.

☐ 3. Click once on the content goal to which the test item will be linked.

☐ 4. Select the **Completion** button at the bottom of the screen.

☐ 5. Select the **New Item** button at the bottom of the screen.

☐ 6. Single-click the template that best fits the test item to be written, or select the **Type Own** button. The screen will advance to the type shown in **Figure 35**.

☐ 7. Enter / edit the test item.

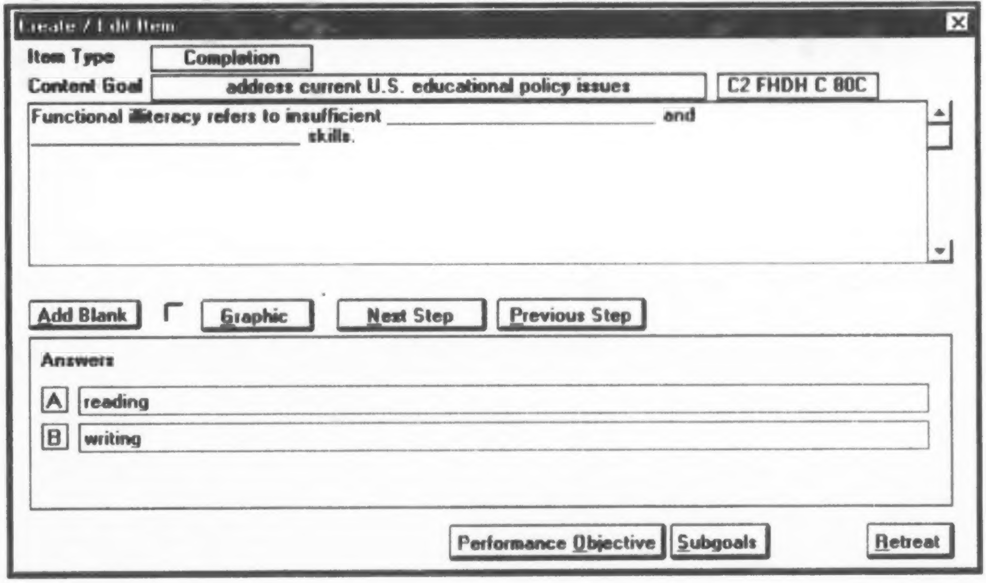
☐ 8. Use **Alt-A** or the **Add Blank** button to insert blank lines where needed. **Note**: See the guidelines in **Info & Insights**.

☐ 9. Indicate correct answer(s) in the space(s) provided.

☐ 10. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.

☐ 11. Optional: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 35. Completion Test Item


Create / Edit Item
Add Blank
Graphic
Next Step
Previous Step
Performance Objective
Subgoals
Retreat

Item Type: Completion

Content Goal: address current U.S. educational policy issues — C2 FHDH C 80C

Functional illiteracy refers to insufficient ______________ and ______________ skills.

Answers

A: reading

B: writing

Time Required: 1 - 5 minutes per item

Info & Insights . . .

General advantages of completion test items

1. Student guessing is reduced.
2. Useful for testing recall of information.
3. This type is relatively easy to construct.

General limitations

1. Less easily scored than true-false, matching, or multiple choice.

Other guidelines

- ExamBuilding uses a standard-sized blank line. This way, students don't receive "hints" about the size of the answer based on line size.

- The program counts each line as being worth one point (the default setting). Add lines as needed for each term, phrase, or concept needed to provide the right answer; not necessarily each individual word. **Note**: In an exam, you may wish to add this statement in the directions for completion test items:

> Some blanks may require more than one word to answer the test item. Credit [may / will not] be given for incomplete answers.

Before You Progress . . .

. . . Make sure that each completion item you write:

☐ Tests a student product.
☐ Tests only one main idea.
☐ Tests for key words or phrases.
☐ Has blanks placed near the end of the item.
☐ Has a clearly limited number of correct responses.

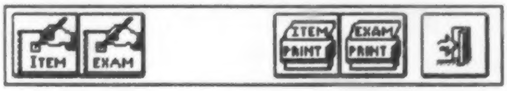
For More Information . . .

Module	Test Item Type
30	True-false
31	Matching
32	Multiple choice
33	**Completion**
34	Short answer
35	Essay
36	Skill test
37	Affective test

✍ Step by Step . . .

☐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.

☐ 2. Select the **Item** (far left) button.



The screen shown in Figure 28 (Module 29) will appear.

☐ 3. Click once on the content goal to which the test item will be linked. **Note**: Make sure that short-answer questions are appropriate to the content goal level of learning (the short answer button will be black and underlined).

☐ 4. Select the **Short Answer** button at the bottom of the screen.

☐ 5. Select the **New Item** button at the bottom of the screen.

☐ 6. Single-click the template that best fits the test item to be written, or select the **Type Own** button. The screen will advance to the type shown in **Figure 36.**

☐ 7. Enter / edit the test item.

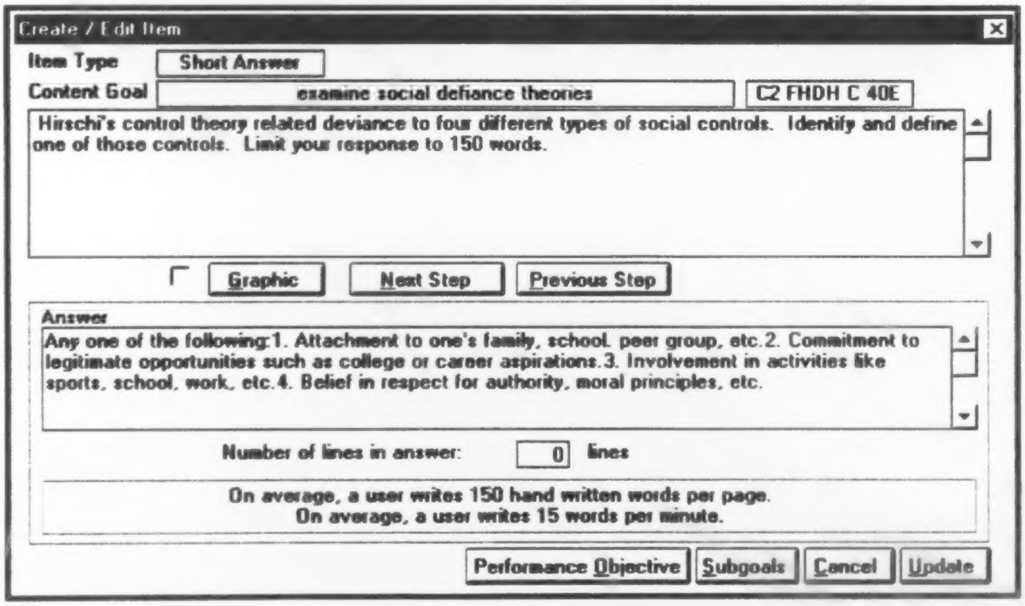
☐ 8. Use the **Tab** key to advance to the answer block.

☐ 9. Outline all key details appropriate to answering the question. **Note**: This will constitute the basis for determining right/partially right responses. If you cannot readily outline an answer, rethink the test item.

☐ 10. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.

☐ 11. Optional: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 36. Short-answer Test Item



Item Type: Short Answer

Content Goal: examine social defiance theories — C2 FHDH C 40E

Hirschi's control theory related deviance to four different types of social controls. Identify and define one of those controls. Limit your response to 150 words.

Answer

Any one of the following:1. Attachment to one's family, school, peer group, etc.2. Commitment to legitimate opportunities such as college or career aspirations.3. Involvement in activities like sports, school, work, etc.4. Belief in respect for authority, moral principles, etc.

Number of lines in answer: 0 lines

On average, a user writes 150 hand written words per page.
On average, a user writes 15 words per minute.

Time Required: 3 - 5 minutes per item

Module 34

Info & Insights . . .

General advantages of short-answer test items

1. This type is relatively easy to construct.
2. More complex types of achievement can be measured.
3. Emphasis can be placed on larger units of instruction.
4. The student is required to generate an original response.
5. The possibility of a student's guessing the correct answer is minimized.

General limitations

1. These may be time-consuming and difficult to score.
2. The areas to be tested may be limited since students need more time to respond.
3. The student's ability to communicate in writing can be confused with his/her ability to answer the question.

Other guidelines

After you enter the answer or outline its key components, review the original question for accuracy and clarity. Use the **Subgoals** button as needed to verify that answer components are valid.

Before You Progress . . .

. . . Make sure that each short answer item you write:

- ☐ Provides clear directions to the student.
- ☐ Tests a student's product.
- ☐ Specifies a limited response length (typically 3 paragraphs and/or 250 words maximum).
- ☐ Relates to a main idea, or at most, two concepts.
- ☐ Has a standard against which to measure the response.
- ☐ Provides for partially-correct responses.

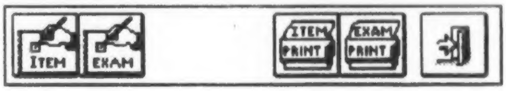
For More Information . . .

Module	Test Item Type
30	True-false
31	Matching
32	Multiple choice
33	Completion
34	**Short answer**
35	Essay
36	Skill test
37	Affective test

Step by Step . . .

☐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.

☐ 2. Select the **Item** (far left) button.



The screen shown in Figure 28 (Module 29) will appear.

☐ 3. Click once on the content goal to which the test item will be linked. **Note:** Make sure that essay items are appropriate to the content goal level of learning (the short answer button will be *black* and underlined).

☐ 4. Select the **Essay** button at the bottom of the screen.

☐ 5. Select the **New Item** button at the bottom of the screen.

☐ 6. Single-click the template that best fits the test item to be written, or select the **Type Own** button. The screen will advance to the type shown in **Figure 37**.

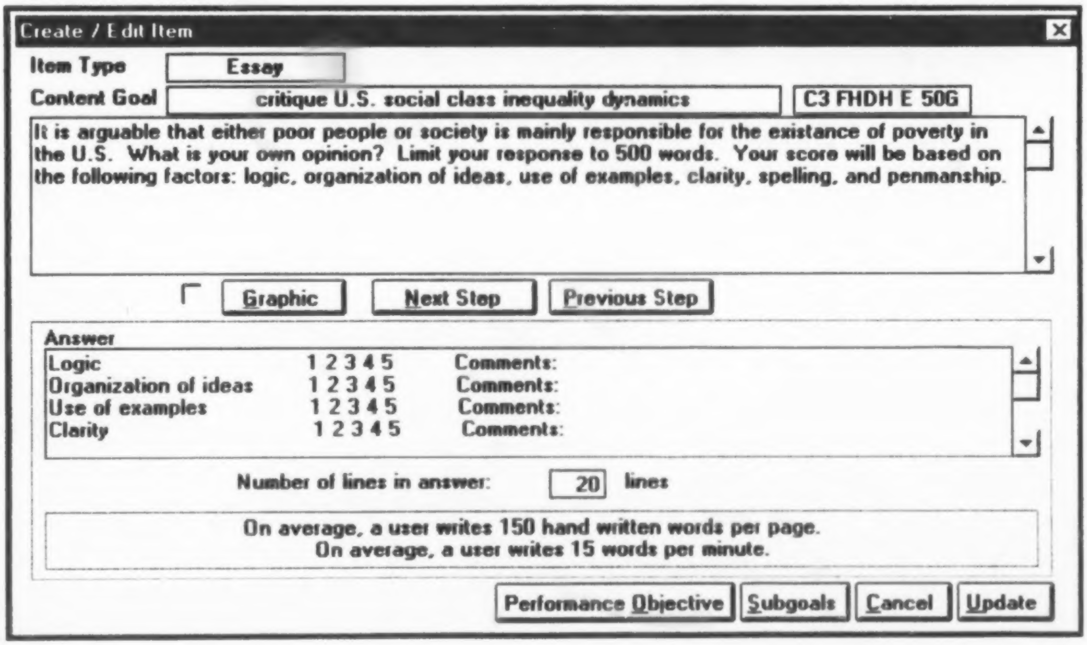
☐ 7. Enter / edit the test item.

☐ 8. Outline all key details appropriate to answering the question. **Note:** This will constitute the basis for determining right/partially right responses. If you cannot readily outline an answer, rethink the test item.

☐ 9. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.

☐ 10. Optional: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 37. Essay Test Item



Item Type Essay

Content Goal critique U.S. social class inequality dynamics C3 FHDH E 50G

It is arguable that either poor people or society is mainly responsible for the existance of poverty in the U.S. What is your own opinion? Limit your response to 500 words. Your score will be based on the following factors: logic, organization of ideas, use of examples, clarity, spelling, and penmanship.

Answer

Logic	1 2 3 4 5	Comments:
Organization of ideas	1 2 3 4 5	Comments:
Use of examples	1 2 3 4 5	Comments:
Clarity	1 2 3 4 5	Comments:

Number of lines in answer: 20 lines

On average, a user writes 150 hand written words per page.
On average, a user writes 15 words per minute.

Time Required: 3 - 10 minutes

Module 35

Info & Insights . . .

General advantages of essay test items

1. This type is relatively easy to construct.
2. More complex types of achievement can be measured.
3. Emphasis can be placed on larger units of instruction.
4. The student is required to generate an original response.
5. The possibility of a student's guessing the correct answer is minimized.

General limitations

1. These are time-consuming and difficult to score.
2. The areas to be tested are limited since students need more time to respond.
3. The student's ability to communicate in writing can be confused with his/her ability to answer the question.

Other guidelines

After you enter the answer or outline its key components, review the original question for accuracy and clarity. Use the **Subgoals** button as needed to verify that answer components are valid.

Before You Progress . . .

. . . Make sure that each essay item you write:

☐ Provides clear directions to the student.
☐ Tests a student's product.
☐ Outlines the conditions under which the response is to be made.
☐ Specifies a limited response length (typically 500 words maximum).
☐ Relates to one or more performance objectives.
☐ Has a standard against which to measure the response.
☐ Provides for partially-correct responses.
☐ Tests the student's command of content, not communication skills.

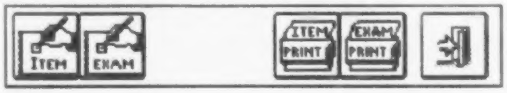
For More Information . . .

Module	Test Item Type
30	True-false
31	Matching
32	Multiple choice
33	Completion
34	Short answer
35	**Essay**
36	Skill test
37	Affective test

✍ Step by Step . . .

☐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.

☐ 2. Select the **Item** (far left) button.



The screen shown in Figure 28 (Module 29) will appear.

☐ 3. Click once on the content goal to which the test item will be linked. **Note:** Make sure that skill test items are appropriate to the content goal domain of learning (the short answer button will be *black* and *underlined*).

☐ 4. Select the **Skill test** button at the bottom of the screen.

☐ 5. Select the **New Item** button at the bottom of the screen.

☐ 6. Single-click the template that best fits the test item to be written, or select the **Type Own** button. The screen will advance to the type shown in **Figure 38**.

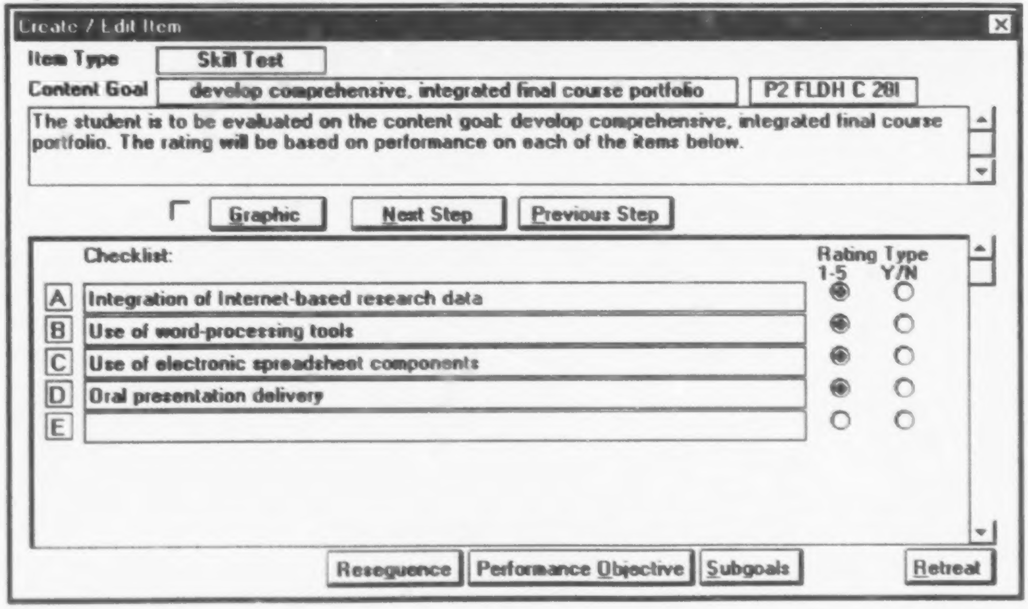
☐ 7. Enter / edit the skill test checklist.

☐ 8. Use the **Resequence** button as needed to reorder checklist items.

☐ 9. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.

☐ 10. Optional: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 38. Skill Test Item



Item Type: Skill Test

Content Goal: develop comprehensive, integrated final course portfolio P2 FLDH C 281

The student is to be evaluated on the content goal: develop comprehensive, integrated final course portfolio. The rating will be based on performance on each of the items below.

	Checklist:	Rating 1-5	Type Y/N
A	Integration of Internet-based research data	●	○
B	Use of word-processing tools	●	○
C	Use of electronic spreadsheet components	●	○
D	Oral presentation delivery	●	○
E		○	○

Time Required: 5 - 15 minutes per item

Module 36

Info & Insights . . .

General advantages of skill test items

1. Allows for testing of both process and product.
2. Readily based on a performance objective.
3. Emphasis may be placed on major units of instruction.

General limitations

1. May require extensive time for line-of-sight evaluation.

Before You Progress . . .

. . . Make sure that each skill test item you write:

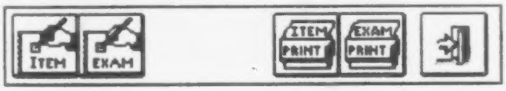
- ☐ Relates directly to a performance objective.
- ☐ Has a time limit specified, if appropriate.
- ☐ Clearly describe how points will be earned.
- ☐ Provides partial credit for qualitative or durability characteristics of the product.
- ☐ Has a point value appropriate to the student's learning investment.

For More Information . . .

Module	Test Item Type
30	True-false
31	Matching
32	Multiple choice
33	Completion
34	Short answer
35	Essay
36	**Skill test**
37	Affective test

✍ Step by Step . . .

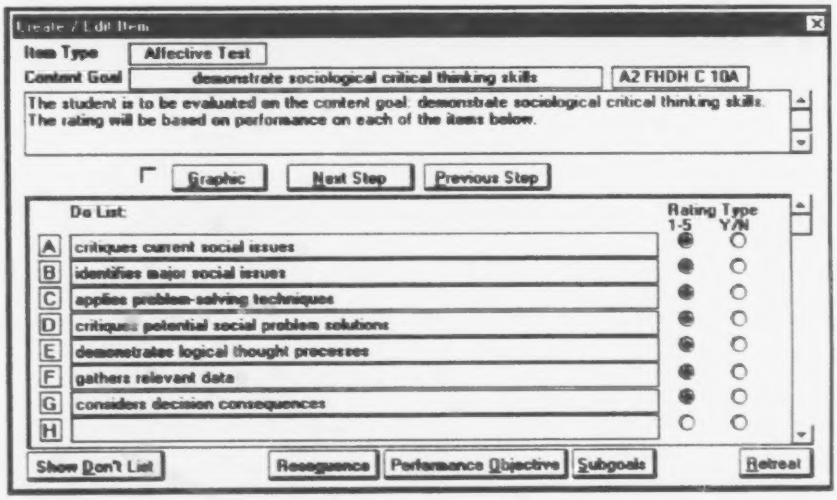
- ☐ 1. Start the IPSI Suite, open an institution and then select **ExamBuilding**. Open a course.
- ☐ 2. Select the **Item** (far left) button.


ITEM
EXAM
ITEM PRINT
EXAM PRINT

The screen shown in Figure 28 (Module 29) will appear.

- ☐ 3. Click once on the content goal to which the test item will be linked. **Note:** Make sure that skill test items are appropriate to the content goal domain of learning (the short answer button will be *black* and *underlined*).
- ☐ 4. Select the **Affective test** button at the bottom of the screen.
- ☐ 5. Select the **New Item** button at the bottom of the screen.
- ☐ 6. Single-click the template that best fits the test item to be written, or select the **Type Own** button. The screen will advance to the type shown in **Figure 39**.
- ☐ 7. Enter / edit the skill test checklist.
- ☐ 8. Use the **Resequence** button as needed to reorder checklist items.
- ☐ 9. Select **Update**. Respond to any error messages as needed. Reselect **Update** as often as needed.
- ☐ 10. Optional: Reenter this screen as needed to attach a graphic image to the test item. See Appendix F for guidance.

Figure 39. Affective Test Item -- Do List


Create / Edit Item
Graphic
Next Step
Previous Step
Show Don't List
Resequence
Performance Objective
Subgoals
Retreat

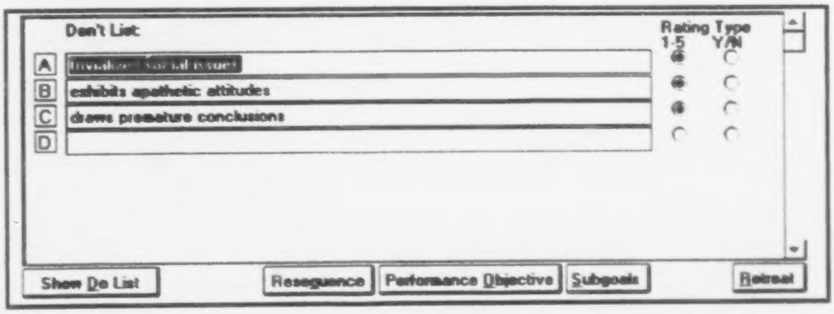
Item Type: Affective Test

Content Goal: demonstrate sociological critical thinking skills A2 FHDH C 10A

The student is to be evaluated on the content goal: demonstrate sociological critical thinking skills. The rating will be based on performance on each of the items below.

	Do List:	Rating 1-5	Type Y/N
A	critiques current social issues	●	○
B	identifies major social issues	●	○
C	applies problem-solving techniques	●	○
D	critiques potential social problem solutions	●	○
E	demonstrates logical thought processes	●	○
F	gathers relevant data	●	○
G	considers decision consequences	●	○
H		○	○

Figure 40. Affective Test Item – Don't List


Show Do List
Resequence
Performance Objective
Subgoals
Retreat

	Don't List:	Rating 1-5	Type Y/N
A	trivializes social issues	●	○
B	exhibits apathetic attitudes	●	○
C	draws premature conclusions	●	○
D		○	○

Time Required: 5 - 15 minutes per item

Info & Insights . . .

General advantages of affective test items

1. Allow for maximum objectivity in evaluating affective student performance.
2. Readily based on a performance objective.
3. Emphasis may be placed on major units of instruction.

General limitations

1. May require prolonged time for instructor evaluation of student performance.
2. Grading may be subject to instructor bias.

Before You Progress . . .

. . . Make sure that each affective test item you write:

- ☐ Relates directly to a performance objective.
- ☐ Uses as many student-generated checklist items as possible.
- ☐ Is based on a content goal at the A2 or A3 level of learning.

For More Information . . .

Module	Test Item Type
30	True-false
31	Matching
32	Multiple choice
33	Completion
34	Short answer
35	Essay
36	Skill test
37	**Affective test**

Using the Random Exam Creation Option

Step by Step . . .

☐ 1. Start the IPSI Suite, select ExamBuilding, and open a course.

☐ 2. Read Info & Insights.

☐ 3. Select **Exam**. This home screen is used to track all exams, developed and in development.

☐ 4. Select **New Exam**.

☐ 5. Enter the title for the exam, i.e., *Quiz 3* or *Midterm Exam*. Then select **Close**.

☐ 6. From the home screen, select **Item Selection**. On the *Main* tab card is a list of all course content goals.

☐ 7. Scroll through this list and select each content goal to be covered in the exam.
Note 1: To deselect a content goal, reclick it.
Note 2: Do not select the Close button yet; this will revert to the home screen without saving selections.

☐ 8. When all relevant content goals are selected, click on the *Random Selection* tab. The screen shown in **Figure 41** will appear. **Note**: This screen shows the total number of test items by type, not content goal.

☐ 9. In the *Random Selection* column, enter the number of items desired.

☐ 10. Click on the **Select Random Items** button.

☐ 11. Click on the **Print Preview** button. Use the screen shown in **Figure 42** to review each item selected.

☐ 12. Select **Return | Return to Main | Close** to return to the home screen.

☐ 13. Select **Directions**. For each type of test item included, edit the directions provided or select the **Use Default Directions** button as desired.

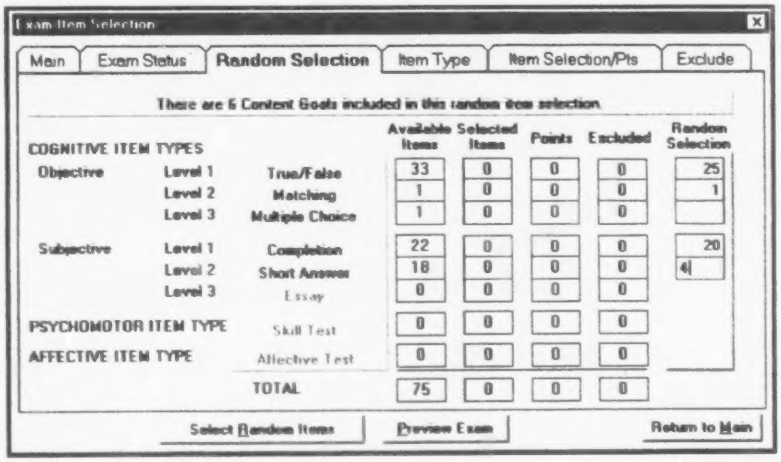
☐ 14. Select **Close** when finished.

☐ 15. Use the **Exam Print** button to generate an exam report and print the exam.

ITEM PRINT | EXAM PRINT

Note: Refer to Appendix F as needed for working with reports.

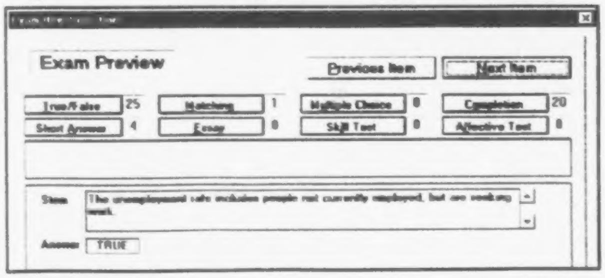
Figure 41. Random Selection of Test Items



There are 6 Content Goals included in this random item selection

			Available Items	Selected Items	Points	Excluded	Random Selection
COGNITIVE ITEM TYPES							
Objective	Level 1	True/False	33	0	0	0	25
	Level 2	Matching	1	0	0	0	1
	Level 3	Multiple Choice	1	0	0	0	
Subjective	Level 1	Completion	22	0	0	0	20
	Level 2	Short Answer	18	0	0	0	4
	Level 3	Essay	0	0	0	0	
PSYCHOMOTOR ITEM TYPE		Skill Test	0	0	0	0	
AFFECTIVE ITEM TYPE		Affective Test	0	0	0	0	
		TOTAL	75	0	0	0	

Figure 42. Reviewing Randomly-selected Items



True/False 25
Matching 1
Multiple Choice 0
Completion 20
Short Answer 4
Essay 0
Skill Test 0
Affective Test 0

Stem: The unemployment rate includes people not currently employed, but are seeking work.

Answer: TRUE

Time Required: 5 - 10 minutes

Module 38

Info & Insights . . .

Just as content goals drive lesson planning and test item development, they also drive the development of course examinations, exercises, etc. Random exam development lets you:

1. Select the content goal(s) from which test items will be drawn.
2. Identify the number of each type of test item to include from the selected content goal(s),
3. Have the program randomly select test items to be included, and
4. Review the test items chosen before the evaluation is finalized.

Random test generation is easy, but there are some issues to consider in using this approach:

1. In random selection, you cannot deselect individual test items selected by the program. To have this ability, use the manual exam development option described in Module 39.
2. There should be enough test items in the content goal(s) selected to make random selection a viable option. This is particularly important if you plan to evaluate student performance on a given content goal on more than one occasion.
3. The test item writer should have avoided writing many duplicate test items using different item types.

Note the different tabs in **Figure 41**. Here are the ones relevant to random test generation:

Tab	Action
Main	Use this tab to select the content goal(s) that make up the basis for the test. You may identify all content goals at once, or one at a time.
Exam Status	This tab lets you see the number of each type of test item available from the content goal(s) selected.
Random Selection	This tab lets you: ☐ View the number of test items available in the selected content goal(s) and ☐ Identify the number of each type of test item to include in the exam.

Before You Progress . . .

. . . Take some time to get familiar with random exam creation. In doing so, you will also be learning how to use the **Item Print** and **Exam Print** functions.

For More Information . . .

ExamBuilding 4.0

Using the Manual Exam Creation Option

## Step by Step . . .

☐ 1. Start the IPSI Suite, select ExamBuilding, and open a course.

☐ 2. Select **Exam**. This home screen is used to track all exams for the course and includes a four-part checklist for new exam development.

☐ 3. Select **New Exam**.

☐ 4. Enter the title for the exam, i.e., *Midterm Examination* or *Quiz 3*. Then select **Close**.

☐ 5. From the *Create / Edit Exam* screen, select **Item Selection**. From the *Main* tab card, you'll have a list of all content goals for the course.

☐ 6. Read **Info & Insights** to consider how you wish to progress.

Using the *Item Type* tab:

☐ 1. Enter the number of each given test item type desired in the block(s) within the yellow *Random Selection* column. **Note**: If any test items were written at a level of difficulty not recommended by ExamBuilding, the program will not let you select any such items from this screen.

☐ 2. Select **Return to Main** when finished.

Using the *Item Selection/Pts* tab:

☐ 1. From the *Main* tab card, select the content goal for which test items will be selected.

☐ 2. From the *Item Select/Pts* tab, select the test item type desired.

☐ 3. From the available test items, click in the small square box to the far right to add in or leave out each test item.

☐ 4. Repeat steps 1 - 3 until all desired items are selected.

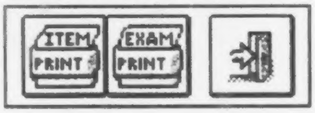
☐ 5. Switch to other tabs as desired. Select **Return to Main** and **Close** as needed.

Finishing exam development:

☐ 1. Select **Directions**. For each type of test item included in the exam, edit the directions provided or select the **Use Default Directions** button as desired for each type.

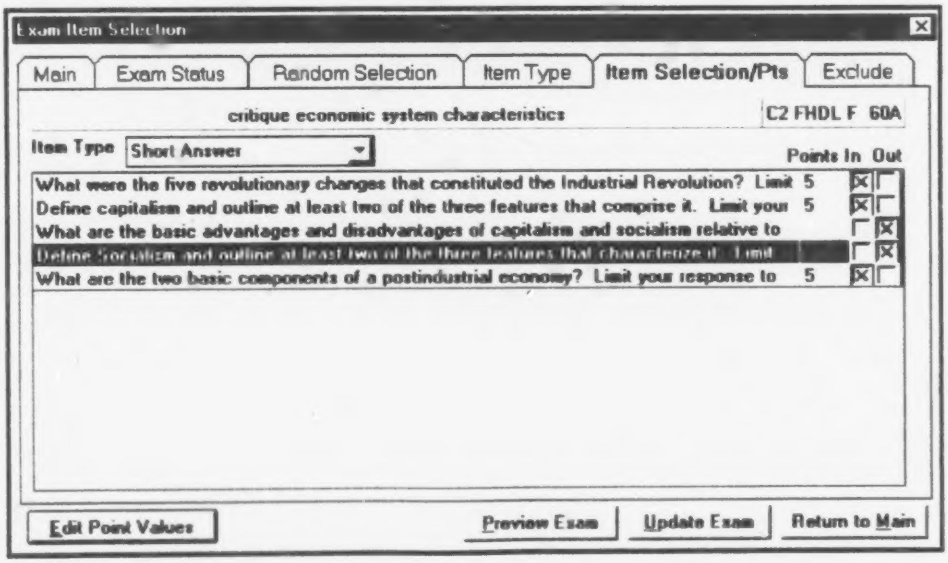
☐ 2. Select **Close** when finished.

☐ 3. Use the **Exam Print** button to generate an exam report and print the exam.



Note: Refer to Appendix F as needed for working with reports.

Figure 43. Manual Selection of Test Items



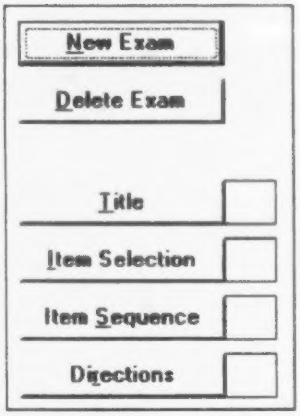
critique economic system characteristics C2 FHDL F 60A

Item Type: Short Answer

	Points	In	Out
What were the five revolutionary changes that constituted the Industrial Revolution? Limit	5	☒	☐
Define capitalism and outline at least two of the three features that comprise it. Limit your	5	☒	☐
What are the basic advantages and disadvantages of capitalism and socialism relative to		☐	☒
Define Socialism and outline at least two of the three features that characterize it. Limit		☐	☒
What are the two basic components of a postindustrial economy? Limit your response to	5	☒	☐

Time Required: 10 -15 minutes Module 39

Info & Insights . . .



Manual exam creation gives you full control over the test items included in each evaluation. You may even alternate as desired between manual and random test item selection one content goal at a time. These options occur as a part of the **Item Selection** step.

Use the following table to determine how you wish to proceed. Alternate freely between these tabs as needed.

Tab	Action
Main	Use this tab to select the content goal(s) that make up the basis for the test. You may identify all content goals at once, or one at a time.
Item Type	Use this tab to let ExamBuilding randomly select a given number of test items for a given content goal.
Item Selection/Pts	Use this tab to have full control over each test item based on ☐ the current content goal selected, and ☐ the test item type.

Before You Progress . . .

For More Information . . .

Appendix A. Outcomes, Objectives, and Goals – Whatever!

Nothing will ever be attempted if all possible objections must first be overcome.
Samuel Johnson, English author

The halls of education teem with many related phrases such as *learning outcome, common learning objective, enabling* and *formative objective*, and the ever-popular *competency*. These and other terms have more similarities than differences between them. Basically, they all are statements that communicate various degrees of student performance.

So why do we need another new term like *content goal*? Wouldn't it be more fitting to call them content objectives? Or just objectives? After all, objectives are small; goals are big.

To be sure, there are some significant characteristics that distinguish content goals from other performance statements. Here's a short list:

1. Content goals have a specific grammatical structure (verb - adjective(s) - object).

2. Content goals have only one verb. (If you're tempted to use more, use the more inclusive verb. Consider the phrase, "identify and describe..." How can a student describe a concept without first identifying it? *Describe* is more inclusive.)

3. By definition, content goals always begin with *The student will.* This phrase orients the activity toward the learner, not the instructor. In turn, it eliminates any confusion as to whether an objective addresses the intent of the *instructor* or the intent of the *instruction*.

4. Content goals are intended to communicate a predetermined exit requirement for the student, not a random series of instructor and/or learner activities. Through this approach, you eliminate the awkward necessity to distinguish between enabling, formative, or summative course material.

5. Ideally, content goals are written to reflect about three hours of instructional time (instruction which occurs *in* and *beyond* classroom walls). This is just one of the ways the IPSI Suite helps you manage time and course content load.

Why are they called content *goals* instead of content *objectives*? Because they are results-oriented, not process-oriented. The process of instruction is detailed in the LessonBuilding segment of the IPSI Suite. In this arena, you will take the content goal and consider the learning experiences - the smaller *subgoals* - that will facilitate student attainment of the larger content goal.

But that's another subject.

[Return to Module 2]

Appendix B. Content Goal Number Crunching

The first significant recommendation CourseBuilding makes is the number of content goals your course should have. It does so by using a set of parameters that enable it to calculate how many content goals you should write. These are:

1. One credit/semester hour = (3) hours learning *x* number of weeks in the term.
2. One lecture credit usually equals 1 clock hour *in* and 2 hours *out* per week.
3. One lab credit usually equals 2 clock hours *in* and 1 hour *out* per week.
4. One other (i.e., clinical or co-op) credit usually equals 3 clock hours *out* per week.

How does this relate to the number of content goals recommended? Based on how you set up the Institutional Credit Policy, here are some variations you may get for a typical 3-credit-hour college course:

Total number of Content Goals for Course :

$$\frac{\text{Total lecture hours/wk + lab hours/wk + Total clinical hours/wk + study hours/wk}}{\text{Number hours per content goal (3)}}$$

Examples			
Weeks in semester Lecture + lab hours/wk Clinical hours/wk Hours outside study/wk Hours instr. time/goal	15 5 0 4 3	15 3 0 3 3	8 3 0 4 2
Formula	$\frac{5(15) + 4(15)}{3}$	$\frac{3(15) + 3(15)}{3}$	$\frac{3(8) + 4(8)}{2}$
Number of Content Goals Recommended	**45**	**30**	**28**

If all examples reflect a 3-semester-hour course, why did the recommendations change? Mainly because of the different numbers of outside hours expected.

What if you don't know how many hours the total course will ultimately have? Then simply leave blanks in the places where CourseBuilding asks for such information. Continue to abide by the 3-hour rule and when all content goals are developed, their number will help you determine how long the course needs to be. If you take this approach, be sure to revisit this part of the program later to validate your numbers.

[Return to Module 6]

Appendix C. The Fine Art of Writing Content Goals

How do I work? I grope.

Albert Einstein

This appendix will help you work more and grope less. It offers several techniques that make writing content goals easier and more focused on actual student performance, regardless of the subject matter you teach.

To make the writing task easier, the first three sections address *Making and Using Verb and Object Lists*, *Converting "Competencies" to Content Goals*, and *Useful References in Writing Content Goals*.

Two additional sections will help you write or revise content goals based on special considerations. *Accommodating Your Educational Audience* describes ways to edit content goals based on your students' classification as freshmen, sophomores, etc. *Editing Content Goals for the 3-hour Time Factor*, offers some quick, easy techniques on how to hit this target.

Making and Using Verb and Object Lists

Regardless of the subject matter, this is one of the most efficient tools you can use to speed up the content goal writing process. It requires you to make two lists. The first is a list of 10-15 verbs appropriate to what your students will be doing mentally, actively, and behaviorally as they progress through a course. The second list includes a set of 10-15 objects that roughly correspond to the verbs you select (Don't try to make a 1-to-1 type list; this may stifle flexibility). These lists do not necessarily have to allude to the subject matter itself – as pointed out earlier, this is often the function of the adjectives included in content goals.

If you do this assignment well, it can help you quickly write and edit content goals that may cover 80-100% of your content goal needs, and it is easily revised. Here's how to proceed:

1. Review current syllabi, textbooks, and other course materials, focusing on existing competencies or introductory objectives in these references. Enter action verbs on an index card or in another convenient place. If you don't find

10 to 15 different *action verbs* that meet with your approval, use the verb lists in Table C1, *The IPSI Suite Verb List*. ***Note:*** Remember to select verbs that relate to student activities, not your own.

Table C1. The IPSI Suite Verb List*

Cognitive Verbs

address
analyze
apply
arrange
assess
assist
associate
breakdown
build
calculate
categorize
check
choose
cite
classify
combine
compare
complete
compute
connect
construct
contrast
convert
count
create
critique
define
describe
design
detect
determine
develop
diagram
differentiate
enumerate
estimate
examine
explain
form
formulate
group
identify
illustrate
indicate
inspect
interpret
label
list
locate
make
manage
measure
modify
name
order
organize
outline
plan
predict
prescribe
quote
recall
recite
record
reiterate
repeat
reply
reproduce
restate
say
select
sequence
solve
specify
state
subdivide
synthesize
tabulate
tell
test
trace
troubleshoot
validate
verify

Psychomotor Verbs

activate
adjust
align
assemble
backflush
balance
bleed
center
change
charge
clean
close
copy
cut
disassemble
discharge
disconnect
display
distinguish
drape
draw
duplicate
evacuate
file
fill
flash
grasp
grind
heat
hold
hone
insert
install
letter
lift
listen
load
loosen
lubricate
machine
manipulate
mark-up
mount
move
open
operate
perform
place
prepare
prime
produce
press
proof
pull
purchase
push
read
reassemble
rebuild
recondition
remove
repack
repair
replace
respond
rotate
separate
serve
set
show
signal
slide
speak
stencil
tap
tighten
torque
touch
transcribe
transfer
tune
turn
type
use
weld
winterize
write
zoom

Affective Verbs

demonstrate
display
exhibit

* New verbs can easily be added as described in Module 9.

2. Repeat the above process, this time selecting 10-15 objects that roughly correspond to the verbs you selected. A sample list is shown in Table C2, *Commonly-used Objects*. Try to keep these objects generic; avoid those that are unique to a given field of study or occupation unless you're developing a specialized or advanced course.

Table C2. Commonly-used Objects

activities
advantages
attitudes
biases
capabilities
capacities
characteristics
components
concepts
consequences
controls
cycles
designs
developments
dynamics
effects
elements
examinations
examples
factors
features
functions
fundamentals
goals
habits
interactions
issues
mechanisms
methodologies
methods
mockups
models
options
origins
paradigms
perspectives
processes
principles
relationships
requirements
responsibilities
roles
rules
sources
stages
states
structures
systems
terms
tests
theories
trends
variations

3. Recall that as you write content goals, the first two words specified are the verb and object. The actual subject matter is often addressed only in the adjectives you use (as evidence, turn to Module 2 and notice the content goal examples included in Table 1; also refer to the examples in Table C3). As you draft content goals, use these two lists to help generate appropriate verb-object combinations that reflect planned student activities.

Table C3. Verb-Object List for a Technical Writing Course

Verbs

analyze
compose
design
draft
edit
finalize
format
interpret
rewrite
select
sequence
state
use
write

Objects

articles
characters
charts
concepts
illustrations
objectives
paragraphs
principles
rules
sentences
symbols
tables
techniques

Converting "Competencies" to Content Goals

How may typical "competency" statements be used to create content goal statements? The following examples will demonstrate how. Each example gives you an opportunity to study some typical competency statements in detail. For each competency, you will find:

- A basic analysis of the competency statement;
- Some examples of content goals that may replace the competency; and
- Some closing remarks appropriate to the examples given.

Competency (business course)	The student should be able to understand the concepts, principles, and operation of the private enterprises system (capitalism) and compare it to other economic systems.
Basic Analysis	1. Replace *should be able to* with *will*. 2. Replace *understand* with an action verb. 3. Break competency into 2 or more content goals.
Possible Content Goals	***Option 1*** *The student will...* define basic economic system principles. compare capitalism and other economic system models. ***Option 2*** *The student will...* define basic capitalism concepts. describe capitalism operational mechanisms. analyze various economic system characteristics. compare various economic system models.
Other Comments	Why did one option have two content goals and the other, four? Either is reasonable, depending on the instructional time needed. Check the effectiveness of your content goals by asking: "If a student can [*perform these content goals*], does this reflect competence as originally stated? If not what else is needed?"

Competency (business course)	The student will be able to explore the information management (IM) function and to describe the concepts and processes involved in creating and utilizing a management information system.
Basic Analysis	1. Delete *be able to*. 2. Replace *explore* with more appropriate action verb(s). 3. Break competency into 2 or more content goals.
Possible Content Goals	***Option 1*** *The student will...* describe basic information management functions. outline various IM system creation and use possibilities. ***Option 2*** *The student will...* differentiate information management functional activities. design small business IM systems. critique IM system creation and application designs.
Other Comments	Notice the different verbs and objects used in the above options. What verb and object combinations would you choose? Also, notice the reference to a small business in Option 2. This reflects one of the ways content goals can be adapted to suit the characteristics of a given course.

Competency (biology course)	Be able to identify and sequence each of the taxonomic classifications (kingdom, phylum, class, etc.) and give examples of each classification for five different species of mammals.
Basic Analysis	1. Begin statement with *The student will* 2. Delete *Be able to.* 3. Eliminate use of multiple verbs by using one of the following methods: -- create 2 or more separate content goals using different verbs -- write one content goal using the most inclusive verb
Possible Content Goals	*Option 1* The student will... sequence taxonomic classifications. create mammalian taxonomic classification chart. *Option 2* The student will... create mammalian taxonomic classification chart.
Other Comments	Notice that Option 2 repeats a content goal in Option 1. Since some verbs are more inclusive than others, you may wish to use the most inclusive of two or more content goals. Cover the smaller details in your lesson plan.

Useful References in Writing Content Goals

Depending on the courses you teach, there may be a variety of reference materials you can use.

Textbooks

Many textbooks include competency-based chapter objectives, but their quality varies widely. Depending on how the book is organized, it may be necessary to use three or more chapter objectives to provide the basis for one content goal. Other times, chapter titles alone may provide the source for one or more content goals. These techniques are easy to use but the results may be less than ideal, based on the principle that textbooks should support the curriculum, not drive it.

A generally better option is to first prepare your verb/object list (as outlined earlier) and then explore the text's glossary or appendices for key material relevant to the course.

SCANS Foundation Skills and Workplace Competencies

As outlined by the U.S. Labor **S**ecretary's **C**ommission on **A**chieving **N**ecessary **S**kills, the SCANS competencies include 5 major competencies and 3 basic skills (plus subsets of each) which offer substantial information about work skills that should be developed in any educational endeavor. SCANS competencies bridge the academic and occupational education "gap," and deserve the attention of every educator. SCANS workplace competencies and foundation skills are listed in Table C4.

Professional Associations

For countless occupations requiring professional certification, professional associations may provide curriculum materials and guidelines. Curriculum quality may vary considerably, but important information may be close at hand, often via the Internet. The typical Internet address structure is *http://www.agencyacromym.org*

Job (Occupational) and Task Analyses

The DACUM (Develop a Curriculum) process has been used for several years to analyze the major duties and tasks associated with many occupations. Someone in your organization may be certified as a DACUM facilitator. Such a person can provide a wealth of information and services in locating and creating DACUM job analysis charts for occupational programs. Many are also able to conduct task analyses which will render content goals ready for inclusion in the curriculum. A model depicting the job and task analysis processes is shown in Table C4. For more information, contact the Center for Educating and Training for Employment (CETE) , Ohio State University at 1-800-848-4815.

Dictionary of Occupational Titles (DOT) and the Occupational Information Network (O*NET)

For decades, the DOT has been a useful source for details regarding the major duties of thousands of occupations, with the latest edition published in 1993. But as the nature and complexity of the U.S. work force has increased dramatically since the dawn of the Information Age, its evolving replacement is the Occupational Information Network (O*NET). This multidimensional Internet-based system will offer occupational data that addresses worker requirements, occupational requirements, experience requirements, worker characteristics, and occupation-specific requirements. For more information on the O*NET, use this Internet address: http://www.doleta.gov/programs/onet
To access the Dictionary of Occupational Titles, go to: http://204.245.136.2/libdot.htm

Curriculum Guides and Performance Objective Catalogs

These are often available through state departments of education and through the Vocational-Technical Education Consortium of States (V-TECS) for many occupational programs.

Table C4. SCANS Workplace Competencies and Foundation Skills

The Three Foundation Skills

Basic Skills
- Reading
- Writing
- Arithmetic/Mathematics
- Speaking
- Listening

Thinking Skills
- Creative thinking
- Decision making
- Problem solving
- Thinking logically
- Mental visualization

Exhibiting Personal Qualities
- Individual responsibility
- Self-esteem
- Sociability
- Self-management
- Integrity

The Five Workplace Competencies

Managing Resources
- Manage time
- Manage money
- Manage materials
- Manage space
- Manage staff

Exhibiting Interpersonal Skills
- Work on teams
- Teach others
- Serve customers
- Lead work teams
- Negotiate with others
- Work with different cultures

Working with Information
- Acquire/evaluate data
- Organize/maintain information
- Interpret/communicate data
- Process information with computers

Applying Systems Knowledge
- Work within social systems
- Work within technological systems
- Work within organizational systems
- Monitor/correct system performance
- Design/improve systems

Using Technology
- Select equipment and tools
- Apply technology to specific tasks
- Maintain/troubleshoot technologies

The SCANS competencies provide a useful frame of reference and planning tool to determine and communicate what general skills students will develop in a course of instruction. They may also be used as the basis for establishing common themes between academic and technical education courses.

Because of the student performance focus of content goals, it is both simple and useful to conduct a comparative analysis, or crosswalk, between the SCANS subcompetencies and a set of content goals for a course. Doing so is a measure of a course's relevance and diversity in helping students develop skills vital to long-term success.

For more information about SCANS competencies, contact the Johns Hopkins University Institute for Policy Studies at **http://infinia.wpmc.jhu.edu/**

A booklet with work forms for conducting SCANS crosswalks is available through the Educational Resources Information Center (ERIC) at **http://www.aspensys.com/eric/**. Search the ERIC database, using the ERIC Clearinghouse on Information and Technology to locate Document Number ED387590 titled "A Practical Guide for Identifying and Using SCANS Competencies in Technical / Occupational Programs."

Accommodating the Educational Level of Your Audience

Table C5 takes the verb-object list one step further to help demonstrate how you may write content goals for audiences at a wide range of grade levels.

Table C5. Writing Content Goals at Different Levels of Difficulty

Difficulty Range	Action Verb	Qualifier	Object
Low	associate cite define quote tabulate	basic elementary fundamental introductory simple	activities characteristics features fundamentals stages
Medium	address categorize determine group outline	advanced detailed intermediate mid-range typical	concepts effects methodologies structures trends
High	analyze calculate interpret solve validate	complex comprehensive high-end interdisciplinary multifarious	consequences dynamics interactions perspectives variations

Editing Content Goals for the 3-hour Time Factor

The "3-hour-per-content-goal" guideline may seem tedious, but the more you can adhere to it, the more you'll appreciate it later; LessonBuilding helps you plan and budget your time (and that of your students) very effectively.

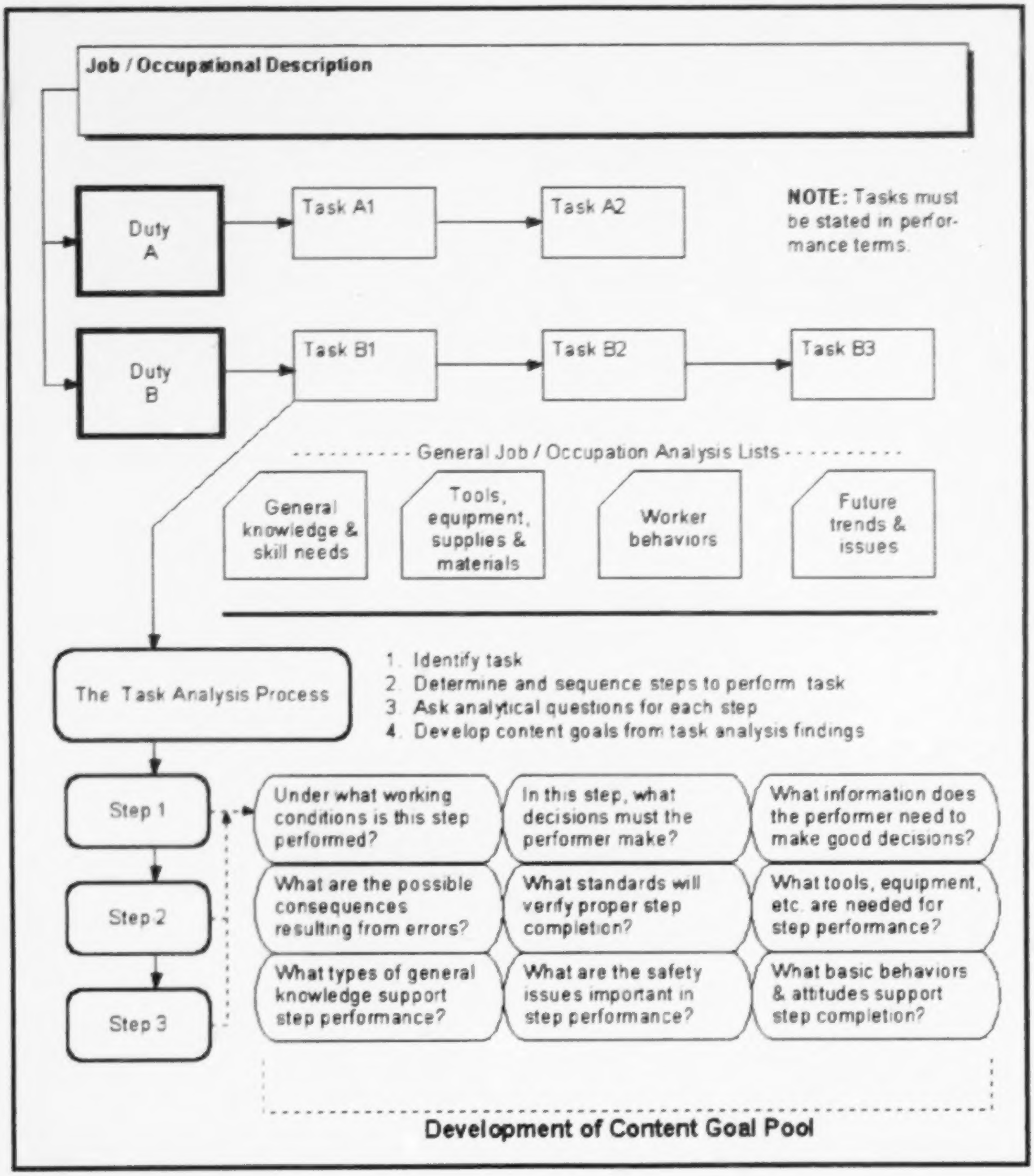
To reduce the amount of instructional time, you may:

- consider using a simpler action verb (i.e., *differentiate* instead of *explain*)
- use a more basic object (e.g., *concepts* instead of *principles*);
- add adjectives (qualifiers) which help limit the scope of the content goal.
- break the content goal into two or more separate ones.

To increase the amount of instructional time, simply reverse these recommendations.

> Writing is easy. All you have to do is cross out the wrong words.
>
> Mark Twain

Table C6. Using Task Analysis to Derive Content Goals


Job / Occupational Description
Duty A
Task A1
Task A2
NOTE: Tasks must be stated in performance terms.
Duty B
Task B1
Task B2
Task B3
General Job / Occupation Analysis Lists
General knowledge & skill needs
Tools, equipment, supplies & materials
Worker behaviors
Future trends & issues
The Task Analysis Process
1. Identify task
2. Determine and sequence steps to perform task
3. Ask analytical questions for each step
4. Develop content goals from task analysis findings
Step 1
Step 2
Step 3
Under what working conditions is this step performed?
In this step, what decisions must the performer make?
What information does the performer need to make good decisions?
What are the possible consequences resulting from errors?
What standards will verify proper step completion?
What tools, equipment, etc. are needed for step performance?
What types of general knowledge support step performance?
What are the safety issues important in step performance?
What basic behaviors & attitudes support step completion?
Development of Content Goal Pool

[Return to Module 8]

Appendix D. The Keys to Effective Sorting Decisions

◘ Guidelines for Making Domain and Level Sorts

Cognitive Domain	**FACT (C1):** Learn a single concept. Uses verbs such as identify, define, list, etc. **UNDERSTANDING (C2):** Put together two concepts. Uses verbs such as explain, describe, outline, etc. **APPLICATION (C3):** Put together two or more concepts to create something new or address unique needs. Uses verbs such as apply, illustrate, analyze, solve, etc.
Psychomotor Domain	**IMITATION (P1):** Instructor demonstrates a procedure. Each student then performs the activity along with the instructor. **PRACTICE (P2):** Each student continues the lab activity with some supervision. **HABIT (P3):** Each student can perform the procedure in twice the amount of time needed by the instructor. *This is the proficiency the student needs in an entry level position.*
Affective Domain	**AWARENESS (A1):** The student is aware of a problem or an issue to be addressed. **DISTINGUISH (A2):** The student can distinguish between correct and incorrect decisions or courses of action. **INTEGRATE (A3):** The student is able to include the desired behaviors in everyday activities. The behavior becomes second nature.

In the psychomotor and affective domains, verbs can be used at different proficiency levels, depending on the conditions and standards specified in the performance objective.

◘ Guidelines for Frequency (or Importance) and Difficulty Sorts

If the Content Goal Is:	The Frequency/ Importance Indicated Is:	The Difficulty Indicated Is:
• **Easy and important**, or • A must for students to pass, or • Something employers expect, or • Taught in introductory courses	HIGH	LOW
• **Difficult but important**, or • A subject some students may fail, or • One that helps distinguish A/B/C/D/F grades, or • Taught early and reinforced throughout the course	HIGH	HIGH
• **Easy and not too important**, or • Something most students pick up on their own, or • Remediation content	LOW	LOW
• **Difficult and develops a rarely-used skill**, or • Given to your best students, or • Enrichment content, or • Designed to help bring back past students	LOW	HIGH

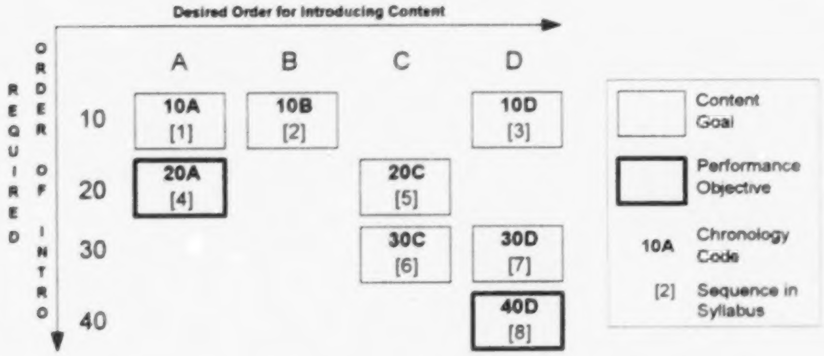
Refer to the initial (boldfaced) characteristic in each block for starters. If this guidance isn't sufficient, refer to subsequent descriptors.

Guidelines for Making Purpose Sorts

The Content Goal Purpose is:	If it . . .	Other Guidelines:
Foundation	- addresses basic subject matter in the course.	These content goals should correspond to statements labeled *high frequency*. These typically constitute about 80% of all content goals.
Crucial	- represents learning / skill that is absolutely critical to course completion or task proficiency.	Generally, no more than 10% of all content goals should be rated as crucial.
Remediation	- represents important review material from previous courses.	No more than 10 % of all content goals should be rated as remediation. These should typically be rated as low difficulty.
Enrichment	- goes beyond the standard content of the program, or; - is reserved for the "best and brightest" students, or; - is designed to encourage enrollment in a future / new course.	No more than 10% of all content goals in a course should be rated as enrichment.

Guidelines for Making Chronology Sorts

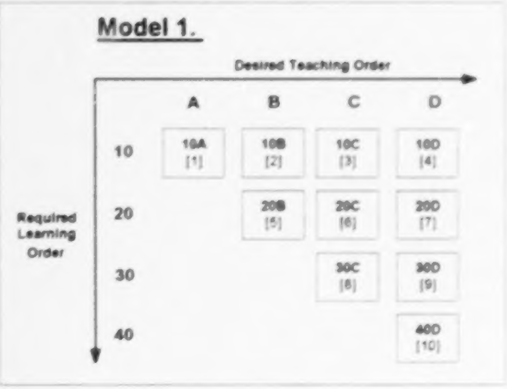
The chronology sort is conducted after all previous sorts are completed. Refer to Module 11 and Appendix E for more information about the chronology sort. Refer to Module 14 for more information on performance objectives.


Desired Order for Introducing Content
REQUIRED ORDER OF INTRO
A
B
C
D
10
20
30
40
10A [1]
10B [2]
10D [3]
20A [4]
20C [5]
30C [6]
30D [7]
40D [8]
Content Goal
Performance Objective
10A Chronology Code
[2] Sequence in Syllabus

[Return to Module 10]

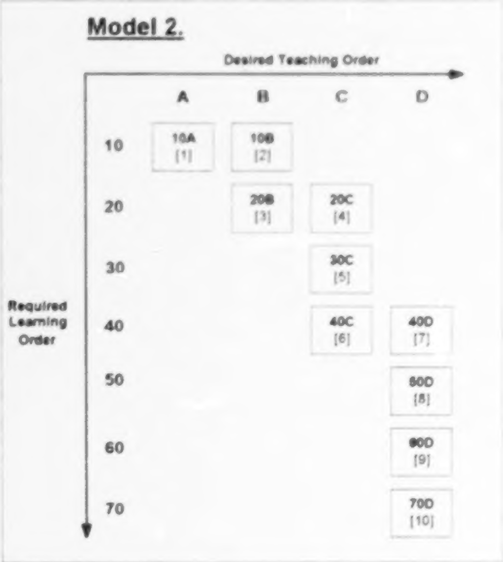
Appendix E. Two Chronology Sort Models: What's The Difference?

Presume that these two models represent the same set of content goals. Each model has certain things in common; both have 10 content goals, and each respective column has the same number as well. Still, there are clear visual differences which will ultimately impact your syllabus layout.


Model 1.
Desired Teaching Order
A
B
C
D
Required Learning Order
10
20
30
40
10A [1]
10B [2]
10C [3]
10D [4]
20B [5]
20C [6]
20D [7]
30C [8]
30D [9]
40D [10]

In the chronology sort, your first job is to group columns of related content goals, with prerequisite or support content at the top of each column. You then sequence these columns according to your preferred teaching order, starting with Column A. When you're finished, you should have a pattern similar to that shown in Model 1.

☐ Content Goal   10A Chronology Code   [2] Sequence in Syllabus


Model 2.
Desired Teaching Order
A
B
C
D
Required Learning Order
10
20
30
40
50
60
70
10A [1]
10B [2]
20B [3]
20C [4]
30C [5]
40C [6]
40D [7]
50D [8]
60D [9]
70D [10]

If you wish, you can save and close the chronology sort now, except for one possible problem. Notice how the two models differ as to how the content goals will be listed in the final syllabus. As you can see, CourseBuilding reads the sorting codes just as you read a book: left-to-right and top-to-bottom. So if you want to list the course content in a column-by-column manner, you should adopt a pattern more like that in Model 2. You may space out individual content goals *vertically* as you wish, only do not transfer them from one column to another unless you have a good reason to do so.

One more thing: When you conduct this sort, don't miss the opportunity to consolidate content goals that are overly-specific. Similarly, if any are too broad, break them out into two or more, giving the 3-hour rule due consideration.

[Return to Module 11]

Appendix F. Working with IPSI Suite Reports

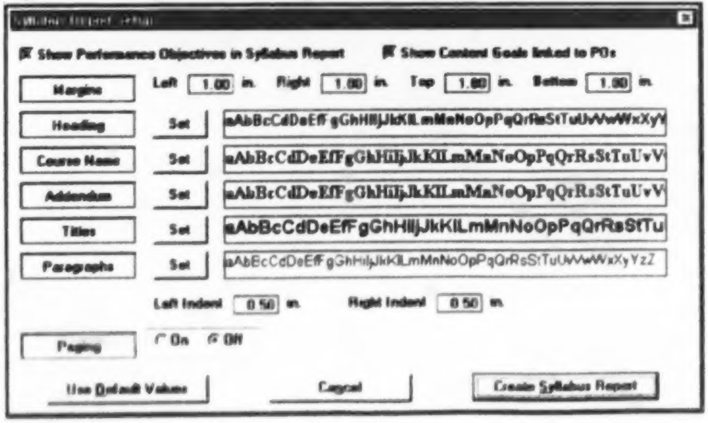
Before you can print anything created in the IPSI Suite, you must first generate a **Report** using the button you have noticed on some program screens. *Final* reports such as syllabi, lesson plans, and examinations let you select text fonts, sizes, etc. before the report is generated, using the screen shown in **Figure F1**. *Interim* reports -- such as a list of content goals -- lack this option, but you can still format such a report after it is generated. Any reports can be saved and accessed outside the IPSI environment. However, data transfer between the IPSI database and the report function is a "one-way street." If you make any changes to content goals, etc. within a report, they will *not* be transferred to the IPSI database file.

The report function is a simplified version of Microsoft Word® (**Figure F2**). It is quite sufficient for printing materials which have no special formatting needs. Indeed, you don't even need to save reports if you wish to use the IPSI Suite to generate final materials for you. Still, as word processors go, you are probably accustomed to a package with more power and flexibility than what you will find here. For that reason, here are some tools and techniques you may need as you progress:

Printing Final Reports. Before you create a final report, the screen shown in **Figure F1** will let you select fonts and other characteristics before the report is generated. Format changes made here will stay in the system until you change them again.

Note carefully all of the options offered in Figure F1, which precedes generation of a course syllabus. At the top, for example, you can opt to include performance objectives in the report. When included (the default setting), they are made an addendum to the basic syllabus report. If you need to add more addenda, create them with your regular word processor and include them later for final reproduction.

Figure F1. Syllabus Setup



Syllabus Report Setup

☒ Show Performance Objectives in Syllabus Report ☒ Show Content Goals linked to POs

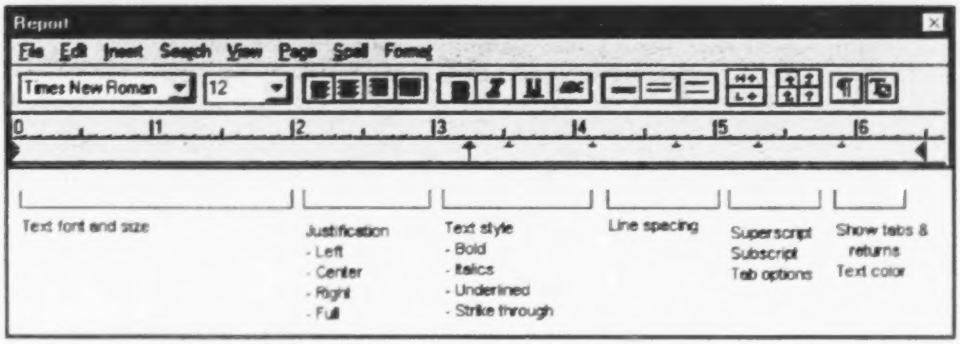
Margins: Left 1.00 in. Right 1.00 in. Top 1.00 in. Bottom 1.00 in.

Left Indent 0.50 in. Right Indent 0.50 in.

Paging: ○ On ● Off

Some default font styles on the setup screen are blue in color. This is useful if students will access the syllabus by computer (i.e., for a distance learning course). But many printers will

Figure F2. Report Formatting Options


Report
File
Edit
Insert
Search
View
Page
Spell
Format
Times New Roman
12
0
1
2
3
4
5
6
Text font and size
Justification
- Left
- Center
- Right
- Full
Text style
- Bold
- Italics
- Underlined
- Strike through
Line spacing
Superscript
Subscript
Tab options
Show tabs & returns
Text color

produce such text in various shades of gray, so consider using the **Set** button to change the text color (as well as font and size). When you're ready, use the **Create Syllabus Report** button to generate the report.

Interim / Subsequent Report Formatting. Before you make any formatting changes within a report (Figure F2), first click-and-drag to highlight all appropriate text, then select the change(s) you wish to make.

Saving a Report. You may save a report and **open** (or *load*) it later with the report function. If you save a report in order to open it in a different word processing program, use **Table F1** to help determine the format to save it in.

Table F1. Report File Formats

Files in this format:	Opening in WordPerfect 6.1	Opening in MS Word 6.0 / 7.0
HE (*.hed) High Edit	Will not convert.	Will not convert.
ANSI (*.txt)	Converts from ASCII (DOS) text. You will need to reset tabs.	Converts from ASCII (DOS) text. You will need to reset tabs.
OEM (*.txt)	Converts from ASCII (DOS) text. You will need to reset tabs.	Converts from ASCII (DOS) text. You will need to reset tabs.
RTF (*.rtf) Rich Text Format	Converts fully. Tabs are set for the entire document.	Converts fully. Tabs are set for each line of text.

Adding Graphics to Reports. You can use the **Insert | Graphic** command to preview and add graphics to reports. Graphics in these formats are accepted:

- Bitmap (*.bmp)
- Graphics Interchange (*.gif)
- PC Paintbrush (*.pcx)
- TARGA (*.tga)

Editing Graphics in a Report. Editing options for graphics are extremely limited in this environment. Note where the curser is located before you import a graphic; one corner of the graphic will be locked into that position. Resizing a graphic within the report is possible, but if you deviate from the original width/height ratio, text and fine details may become skewed, compromising visibility and usefulness. For best results in such situations, first save the report as an *.rtf file and then open it with a full-featured word processing program. Then add your graphic and edit it for size as needed. You can prevent skewing fine details by using the following techniques:

For WordPerfect 6.1 users:

1. Use **Graphics | Image** to add a graphic.
2. From the *Graphics* button bar added to your screen, select **Content**.
3. At the bottom of the window, select **Preserve Image Width / Height Ratio**.

For MS Word 6.0 and 7.0 users:

1. Use **Insert | Picture to** import the graphic into the file.
2. To resize the graphic without skewing it, first click once on the graphic. Then click-and-drag any of the *corner* sizing handles.

Attaching Graphics to Test Items. You can attach graphics to any of the test items you write in ExamBuilding. To do so, first write and save the item. Then reopen it and a graphics button will be provided for identifying the graphic.

Printing Reports. Before you print a report, use **File | Print preview** to inspect it. If the report includes unnecessary gaps, first deselect **Print Preview** and then select **Page | Repaginate**. Then preview the report again. If you expect examinations to be graphics-intensive, it may be more convenient for you to reference the graphic file name in each appropriate test item. Generate the examination, save it to an *.rtf file, open it with your regular word processor, and import each graphic there.

Appendix G
Exposing the Secret Curriculum: Writing and Evaluating Content in the Affective Domain

Turn off all alarm watches, cellular phones, and pagers. Come to class *prepared for class*. Submit homework on time. Be on time. Participate in class discussions. Use proper grammar. Be culturally sensitive to one another. No lame excuses -- no excuses at all. Accept responsibility for your (in)actions.

I will reduce your final grade a full letter the next time you . . . !

Been there, done that? It's possible. Is there a better way? Absolutely: Include affective content goals in your course.

Recall that by using action verbs, content goals are made *observable* and *measurable*. Affective content goals are no different. Indeed, with CourseBuilding and ExamBuilding, you have two excellent tools for developing and measuring affective content in your course.

Two SCANS Competencies with Subcompetencies

Demonstrating Interpersonal Skills
- Working on teams
- Teaching / instructing others
- Serving customers
- Leading work teams
- Negotiating with others
- Working with different cultures

Exhibiting Personal Qualities
- Showing individual responsibility
- Demonstrating sociability
- Displaying self-management
- Displaying integrity

As shown here, two of the SCANS[1] competencies provide easy inspiration for writing affective content goals. Common verb-object combinations include:

- demonstrate . . . skills
- exhibit . . . traits
- display . . characteristics

The rest is up to you. But how do you evaluate such content?

Much easier than you might think. As a preview of coming attractions, note that ExamBuilding includes an option for writing a type of test item called the *affective checklist*. Each checklist is made up of two lists: *Do's* and *Don't's*. Take, for example, the content goal *demonstrate personal responsibility*. What actions would you expect to observe in a student that indicate personal responsibility? Possibly some things like:

---

[1] Refers to the U.S. Labor Secretary's Commission for Achieving Necessary Skills. See Appendix C, Table C4 for more information

- being on time.
- coming to class with all necessary materials.
- completing homework assignments on time.

Now, what actions would you expect *not* to observe that reflect on personal responsibility?

- making excuses.
- cutting class.
- losing self control.

Now consider that you may only need to originate the content goal; your students can help brainstorm the lists of *Do's* and *Don't's* as a part of your lesson, thus giving them a sense of ownership and commitment. Finally, imagine that these lists appear in a unique test item that *you* complete by circling an appropriate point value based on observed student behavior. Such a test item might look like this:

Your instructor will complete this test item. You will be evaluated on the content goal, *demonstrate personal responsibility*.

Do's	U				A
• be on time.	1	2	3	4	5
• come to class with all necessary materials.	1	2	3	4	5
• complete homework assignments on time.	1	2	3	4	5
Don't's					
• make excuses.	1	2	3	4	5
• cut class.	1	2	3	4	5
• lose self control.	1	2	3	4	5

And that is how you expose the secret curriculum.

❖ ❖ ❖

One more thing -- Where should you place affective content in the chronology sort? You can integrate them wherever you think most appropriate, but I frequently find that it's most appropriate to include them early in the course, even in the first class. Then save affective evaluation until near the end of the course.

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Appendix H. Adding Performance Objective Templates

Templates exist for your convenience. To enhance that convenience, you may add as many templates as you wish; they will be stored in the IPSI database for your institution. As you draft each performance objective, you may then select the template(s) relevant to your needs. Here is how to add templates:

☐ 1. Open an institution, but not a course.
☐ 2. From the menu bar, select **CourseBuilding | Settings**.
☐ 3. Select the tab card for CourseBuilding. The screen in **Figure H1** will appear.
☐ 4. Select **New Template**.
☐ 5. Enter the new template, then select **Update**.
☐ 6. Select **Close** when all templates have been added.

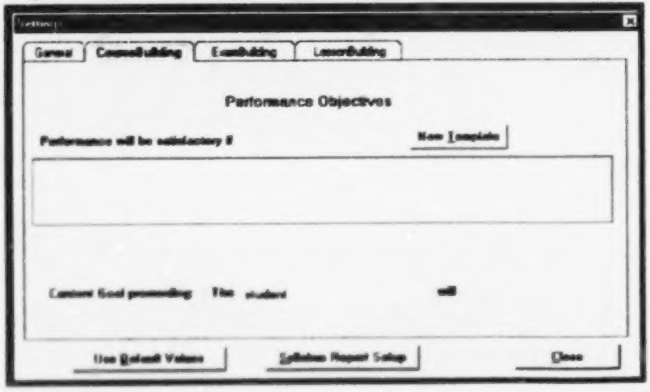
As you review **Figure H1**, note that is designed to let you add templates only for standards. You may also wish to add templates related to conditions -- the program software makes no distinction. If you do this, precede each template with an appropriate leader such as *Cond:* or *Std:* to speed up the selection process.

Adding new templates will increase the final editing needed in the performance objective. In doing so, remember to keep all conditions *before* and all standards *after* the stated content goal.

What condition templates may you wish to add? Those that:

- refer to the settings in which students will be evaluated (withing a college testing center, in clinicals, in cooperative education settings, during lab activities, etc.
- specify the tools and materials the student will have available at evaluation time -- or items they may provide for themselves.
- address items or materials that students may *not* use, if they have normally been allowed to use these materials in class or during skill practice sessions.

Figure H1. Adding Templates


Settings
General
CourseBuilding
ExamBuilding
LessonBuilding
Performance Objectives
Performance will be satisfactory if
New Template
Content Goal preceding: The student will
Use Default Values
Syllabus Report Setup
Close

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Appendix I. Establishing a Point-based Grading System

How do I grade thee? Let me count the ways.

With all due apologies to Elizabeth Barrett Browning, this is nonetheless a significant question as you (re)consider how you currently measure student performance. Why? Because in the CourseBuilding environment, you may want to change it.

Ignore for now all the *testing* techniques you currently use -- that will be addressed with ExamBuilding. Instead, consider the variety of *grading* techniques you use at any stage in a given course. Check each one of the grading types that apply:

- ☐ percentage grade
- ☐ letter grade
- ☐ point grade
- ☐ pass-fail grade
- ☐ affective grade
- ☐ Other:____________

Did you check more than one? If so, you may have a difficult question to answer: *At the end of the course, how do you reconcile these techniques and render an accurate, objective grade?* In performance instruction, this is not a question that should be rationalized away, especially when there is a simple solution that is easily included in your final syllabus:

> Your performance objectives and exams will be translated to points and the points to grades. There are 450 points possible [*for example*] and grades will be earned as follows: A = 405 to 450 points; B = 360 to 404 points; C = 315 to 359 points; D = 270 to 314 points.

As this simple statement shows, CourseBuilding uses a point system exclusively to help you determine the final grade each student will receive. Points for appropriate content goals are entered into the computer as a part of final syllabus development.

As a result of this point-based system, several potential grading errors are avoided and student performance grading is significantly simplified. Even so, there may still be some questions you want answered:

Do I have to give a point value to all content goals? No, but make sure you assign point values to all performance objectives. Also consider a point value for each content goal that received an important sorting classification, such as its purpose being critical to course success. (This is a good time to consider if such content needs its own performance objective.)

Some content goals are more important than others. How do I reflect this in a point-based system? By increasing the number of points such content is given. (Naturally, this means that you should test the most important content more thoroughly.)

Don't be concerned with how many *total* points your course includes. As the above example indicates, CourseBuilding will automatically calculate the point ranges for each final letter grade. It will even let you specify the percentage ranges for an A, B, etc.

Accommodating this approach will necessitate a comprehensive revamping of my current system. Is there any way I can avoid this? Possibly. Much depends on how subjective you are in your current system. As an informal analysis, circle the number you consider to be most typical of your current evaluation system:

My current grading system is:

Highly Subjective	1	2	3	4	5	6	7	8	9	10	**Highly Objective**

If you are in the 8-10 range, you should have little trouble adapting to a point-based system. If your system is in the 1-4 range, you may have some work ahead. Consider one more question: How closely did you follow the CourseBuilding recommendation for the number of content goals you should write? Complete the following exercise:

Number of content goals recommended: ___ Number of content goals written: ___

The number of content goals *written* represents what percentage of the number *recommended?*

a. 90-100% or more **b.** 80-90% **c.** 70-80% **d.** 60-70% **e.** Less than 60%

If you selected answers c, d, or e, this also indicates a measure of work that you should address before going any further.

What if you didn't fall into either "danger zone?" Does that mean the original question is invalid? Not at all. It only means that you have an option which may readily fit your situation: Write a set of content goals which are based on your current evaluation system.

Refer now to **Table I1** on the following page. This table presumes that you currently use a system built on a typical variety of assignments/tests and that you use a percentage grading system. Your job is simply to write a set of content goals based on the evaluation types you currently use. Then, when you are ready to complete the evaluation component for the final syllabus, you assign an appropriate number of points which reflect its overall importance in the course.

If you adopt this approach, make sure that you have written performance objectives for each stated evaluation content goal. Also, make sure you link each appropriate content goal to its proper performance objective so students will know what each examination will cover.

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Table I1. Writing Content Goals for Evaluation Purposes

A Typical Evaluation System	This Portion is Set Up in CourseBuilding		How the System Might "Play Out"			
	Sample Content Goal	**Total Point Value**	**Raw Points Available on Evaluation***	**Raw Score Earned**	**Calculations** (Key punches shown as applied using a standard pocket calculator)	**Course Points Earned**
Midterm 25%	complete midterm exam	125	75	70	70 / 75 % [=] 93.3 125 * 93.3 % [=] 116.625	117
Final 25%	complete final course exam	125	50	40	40 / 50 % [=] 80 125 * 80 % [=] 100	100
Project 20%	complete course project	100	100	85	85 / 100 % [=] 85 100 * 85 % [=] 85	85
Quiz 1 5%	complete quiz 1	25	10	7	7 / 10 % [=] 70 25 * 70 % [=] 17.5	18
Quiz 2 5%	complete quiz 2	25	15	6	6 / 15 [=] 40 25 * 40 % [=] 10	10
Quiz 3 5%	complete quiz 3	25	20	17	17 / 20 % [=] 85 25 * 85 % [=] 21.25	21
Quiz 4 5%	complete quiz 4	25	25	18	18 / 25 % [=] 72 25 * 72 % [=] 18	18
Quiz 5 5%	complete quiz 5	25	30	26	26 / 30 % [=] 86.66 25 * 86.66 % [=] 21.665	22
Quiz 6 5%	complete quiz 6	25	35	29	29 / 35 % [=] 82.857 25 * 82.857 % [=] 20.714	21
Total 100%	**Total:**	**500 pts**	*As determined by the type and number of test items you select in ExamBuilding		Your calculation process may vary based on the type of calculator you use.	**412 pts "B"**

Appendix J. (Mis)Adventures in Test Item Writing

> ***Education is the ability to listen to almost anything without losing your temper or your self-confidence.***
> *Robert Frost, Poet*

ExamBuilding is a very powerful tool to help you remove common mistakes before they are discovered -- and sometimes exploited -- by students. The flip side of that coin is that the program will give you an education in test item writing that you may find frustrating from time to time. Of course, it cannot help you avoid *all* errors associated with test item writing, but most of the errors it can (and will!) point out are so fundamental that you can substantially improve test reliability and validity if you respond effectively to error messages when they appear.

Below are several typical testing item errors. Some relate to writing individual items. Other errors relate to how examinations are organized. ExamBuilding will not help you avoid all of these, but through a combination of your awareness and the program's ability to cite many of these flaws, test reliability and validity can be dramatically improved.

Error: Identifiable answer patterns

Description	**ExamBuilding Helps By . . .**
• Multiple choice test items which have a predictable answer pattern such as *abcdabcd* • *True/false test with answers such as TTTFFFTTTFFF*	• Randomly sequencing test items when exams are generated to avoid predictable answer patterns.

Error: Longest alternatives

Description	**ExamBuilding Helps By . . .**
In true-false items, longer items tend to be true. In multiple-choice items, the longest alternative has the greatest chance of being correct.	• offering true-false item templates designed to help keep test items short. • notifying you if the reading level of the statement/question is appropriate. • notifying you if one alternative is significantly longer than others in multiple-choice items.

Error: Specific determiners

Description		ExamBuilding Helps By . . .
Use of words known as *absoluters* and *hedgers* which can give away a correct answer. T F Christopher Columbus is always credited with having discovered America.	•	Notifying you if one of the words shown below is used in a test item (Absoluters tend to make true-false items false; hedgers tend to make them true.)

Absoluters:	absolute	always	conclusive	definite
	eternal	exactly	impossible	irrefutable
	never	no	perfect	positive
	precise	singular	specific	undeniable
	undisputable	undisputed	unequivocal	unique
Hedgers	apparent	approximate	apt	common
	conceivable	feasible	frequent	hardly
	inclined	infrequent	liable	likely
	near	occasional	often	plausible
	possible	potential	probable	questionable
	rarely	relate	seeming	seldom
	sometimes	tend	typical	unlikely
	unusually			

Error: Basic skill level mismatches

Description		ExamBuilding Helps By . . .
Test items may require a level of reading, writing, or math ability that is inconsistent with students' demonstrated abilities.	•	allowing the test-item writer to set a target reading grade level goal for test items.

Error: Verbal association between stem and correct answer

Description	ExamBuilding Helps By . . .
A word in the stem of a multiple choice question is repeated in the correct option, increasing the student's ability to guess the correct answer.	

Error: Overlapping distractors

Description	ExamBuilding Helps By . . .
If two alternatives in a multiple-choice item are basically the same, this overlap allows the student to disregard both and increase chances of guessing the correct answer.	

Error: Grammatical clues

Description	ExamBuilding Helps By . . .
Example: An example of a tree in the genus *Querus* is an a. Maple tree b. Mulberry tree c. Oak tree d. Pecan tree The word *an* at the end of the stem makes only one answer grammatically correct.	• recommending the use of *a / an* in place of either word used alone prior to a blank line or multiple-choice question.

Error: Skill sequences

Description	ExamBuilding Helps By . . .
Most skill tests require a logical sequence of student activities.	• offering the opportunity to resequence activities.

Error: Unclear directions

Description	ExamBuilding Helps By . . .
Examinations and each group of test items should clearly describe how the student is to respond. Directions should be unambiguous and concise.	• including sections for entering directions in all relevant locations when examinations are created.

Error: Single-function tests

Description	ExamBuilding Helps By . . .
Many tests use only one type of test item. This offers some students an unfair advantage or disadvantage) depending on how they respond to different types of items.	• guiding the user in writing different types of test items appropriate to the domain and level of learning for the content goal on which each test item is written.

Error: Time binds

Description	ExamBuilding Helps By . . .
Unless efficiency (time) is a standard in the performance objective, it should not be a factor in testing. Generally, students should be given at least twice the time it takes the instructor to complete the examination	• providing access to the performance objective for reference as needed.

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Acknowledgments

Saying "thank you" to all the people who have supported me in this endeavor is simply inadequate. This book may not have been a dream, much less a reality, were it not for their contributions on my behalf.

Most of all, I must express my greatest thanks to my wife Susan, who in 25 years of marriage has blessed me with her love, support, and encouragement in this and many other endeavors. For all the times she has been a patient "computer widow," and for all the other times she has pulled me away from the keyboard for my own benefit, I am indeed thankful.

I am also thankful to my extended family for their support and prayers, even when their response to my work was inclined toward the question, "You're writing a book on *what?*"

Many others have provided practical support – direct and indirect – in this initiative. They include Brent Kesterson, Associate Dean of Instructional Design at Richland College; Sharon Burton, Office Technology Professor at Brookhaven College; Gemmy Allen, and Darrell Thompson, Management Professors at Mountain View College, and Karen Stark, Instructional Associate at Mountain View.

Last, but hardly least, I am extremely appreciative for a small but determined number of individuals who virtually scoured draft manuscripts, pointing out everything from poor sentence structure to flaws in logic and errors of omission. I have been both gratified and humbled by their efforts on my behalf. They are:

Cathy Beaty, Health Information Management Technician Professor, Mountain View College
Dan Vogler, Ed.D., Chief Executive Officer, Instructional Performance Systems, Inc.
Goeffrey Grimes, Ph.D. English Professor, Mountain View College
Ngoc Truong, Curriculum Development Coordinator, Richland College
Peggy Borchardt, Grant Coordinator, Richland College
Randy Christian, Invasive Cardiovascular Technology Professor, El Centro College
Sue Robertson, Health Information Management Technician Professor, Mountain View College

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*Secretary's Commission on Achieving Necessary Skills (US Secretary of Labor)